A Military Vignette for a Heterogeneous Data Proximity Tool (HDPT) Study

by Eric G. Heilman

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14. ABSTRACT

The U.S. Army Research Laboratory is creating a software tool that has potential utility in the Company Intelligence Support Team analysis process. The tool, called the Heterogeneous Data Proximity Tool (HDPT), uses personnel attributes to produce a three-dimensional similarity diagram that contains a mapping of individuals to likely groups operating within a unit's boundaries. The HDPT prototype was field tested during the Communications-Electronics Research, Development, and Engineering Center On-The-Move (OTM) exercise. Including the HDPT in the OTM Event 12 (E12) exercise required the development of a meaningful investigational strategy along with a supporting vignette and test data that all fit within the E12 scenario. The HDPT vignette and supporting data define initial conditions and establish testing expectations for HDPT execution within the E12 scenario. During E12, Soldiers operated the HDPT prototype to determine whether performance matches expectation. The HDPT OTM vignette and supporting data are described in this report.

15. SUBJECT TERMS

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1. Introduction

Combating counterinsurgency (COIN) has increased the complexity of operations within today's military theater, resulting in static deployments and broader mission sets for lower echelon units. When company-sized military units first encountered the COIN environment, Soldiers did not have an inherent understanding of the new battlefield dynamics. Nevertheless, over several years of practice, company-echelon units developed tactics, techniques, and procedures for finding and exploiting sources of military intelligence necessary for successful tactical campaigns within their limited area of operations (AO).

While standardized doctrine for company intelligence practices remains absent, battalion unit commanders have created a formation of company personnel responsible for the development of military intelligence. The U.S. Army first experimented with Company Intelligence Support Teams (COISTs) in 2007 during a National Training Center (NTC) rotation (*1*). Since then, the military has further developed and embraced the COIST concept. Current COIST implementations feature a strong emphasis on intelligence collection, high-value individual targeting, and situational analysis.

The U.S. Army Research Laboratory (ARL) is creating a software tool that has potential utility in the COIST intelligence analysis process. Called the Heterogeneous Data Proximity Tool (HDPT), it incorporates visual analytic techniques that assist military intelligence analysts in understanding operational area human terrain. It uses personnel attributes to produce a three-dimensional (3-D) similarity diagram that contains a mapping of individuals to likely groups operating within a unit's boundaries. For its operation, HDPT requires a reference set of individuals with known group affiliations. In the initial prototype, groups include insurgents, innocents (friendly), and criminals. As intelligence collection personnel encounter unaffiliated individuals and accumulate data about them, HDPT will compute and plot their positions with regard to existing reference individuals. The resulting graph portrays an approximation of the new individual's orientation within the known human terrain.

HDPT is a prototype ready for field testing. One such opportunity is the Communications-Electronics Research, Development, and Engineering Center (CERDEC) On-The-Move (OTM) exercise. The CERDEC Command, Control, Communications, and Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) OTM Testbed was begun in 2001 to allow demonstration, testing, and evaluation of the U.S. Army Future Combat Systems (FCS) emerging technologies (*2*). Over its years of operation, the OTM Testbed has become an exercise with the broader goal of providing a venue and structured program to aid the continued development of military technologies. As such, the OTM exercise features a robust scenario that includes actual and simulated military and counterinsurgent forces pitted against one another on a diverse terrain environment.

Including the HDPT in the OTM Event 12 (E12) exercise required the development of a meaningful investigational strategy along with a supporting vignette and test data that all fit within the E12 scenario. The HDPT vignette and supporting data define initial conditions and establish testing expectations for HDPT execution within the E12 scenario. During E12, Soldiers operated the HDPT prototype to determine if performance matches expectation. The OTM HDPT vignette and supporting data are described herein, while the analysis of generated use data will be left to a subsequent report.

2. C4ISR E12 Scenario Overview

In general, military scenario design products provide a context useful in furthering research or training goals. The E12 staff developed a military scenario using the U.S. Army Training and Doctrine Command-approved Multi-Level Scenario Module 1.0 (MLS 1.0) as a framework (*3*). MLS 1.0 provides an overarching description of a worldly situation requiring the deployment of U.S. armed forces into a region of strategic concern. Specifically, the U.S. Army 7th Infantry Division (7ID) is deploying as part of a larger force to contain and repulse an incursion by a regional aggressor, "Attica," in an allied state, "Elis," over water rights. The scenario specifies the units and equipment contained in the 7ID and threat units, the terrain and demographics of the simulated countries, and other regional information.

The E12 staff crafted a scenario that blends MLS 1.0 information with the physical realities and technological study requirements to satisfy the CERDEC mission "to provide a relevant environment/venue to assess emerging capabilities in a C4ISR System of Systems (SoS) configuration to enable a network centric environment in order to reduce and mitigate risk for Future Force Concepts and Capabilities, accelerate technology insertion into the Current Force, and support Army BCT Modernization and the Future Force" (*4*). Every aspect of the E12 scenario was affected by the limitations of available terrain, personnel, equipment, and technology testing needs. Yet these impacts are considered normal conditions for experiment and exercise scenario design: ". . . experiments best achieve their objectives by tailoring scenarios to provide the best set of conditions for assessing selected issues or testing a set of specific hypotheses" (*5*). The E12 scenario provided a stage for technology testing inclusive of a relevant military background and a set of orchestrated events. Opportunities for strenuous testing under realistic battlefield conditions were paramount to the goals of improving the performance of participating technology products.

The successful execution of the E12 scenario required considerable planning. As is typical of most military scenarios, creation of the setting and events was paramount to the planning process. Determination of scenario setting is a tension-filled struggle where scenario developers attempt to fit military activities to the realities of physical and technological limitations. This step usually involves multiple iterations. For E12, the result was a scenario storyboard that

became a flexible guide for the development of a detailed exercise event plan capable of accommodating the dynamic imposition of changing participant requirements and personnel and equipment availability. The following sections will provide a limited description of the E12 scenario with emphasis on planning considerations.

2.1   Physical Realities

The MLS 1.0 document provided rich background information for the development of many different scenarios. Presented at a macro level, the scenario provides relevance for U.S. Army operations within multiple battlefield environments. However, the description is focused on a higher echelon tactical unit structure more supportive of simulation exercises than for practical, smaller-scale field exercises such as E12. Thus, the E12 scenario features many adaptations based on the framework provided by the MLS 1.0 document.

2.1.1 Terrain

The first scenario consideration is terrain. All military action takes place on or over an area of ground. For E12, the exercise facilities are located on Fort Dix, NJ. Unfortunately, the area is not part of the MLS 1.0 suggested terrain. However, the area does feature characteristics (vegetation, topography, etc.) typically found in the MSL 1.0 terrain, and therefore the terrain location difference was not a significant departure.

Fort Dix features a wide array of firing ranges useful for training and experimentation. Figure 1 shows the E12 scenario terrain. The area contains urbanized and rural infrastructure suitable for military operations. To better define the scenario operational area, the E12 staff chose several of the ranges to represent villages and military installations (such as forward operational bases [FOBs]). Locations for these are shown in figure 1 and their functions within the scenario are shown in table 1. Additionally, these villages are connected by a network of roads. Since roads are important for movement between villages on the terrain, these were prominent for certain military operation settings.

The terrain is suitable for a variety of military operations ranging from very small unit actions (squad) to larger tactical deployments (battalion). The diversity of manmade features supports a number of different tactical operations. However, given that the current military personnel experiential base reflects the most recent conflict, COIN operations became the focus of the E12 scenario. The Fort Dix terrain is suitable for COIN operations.
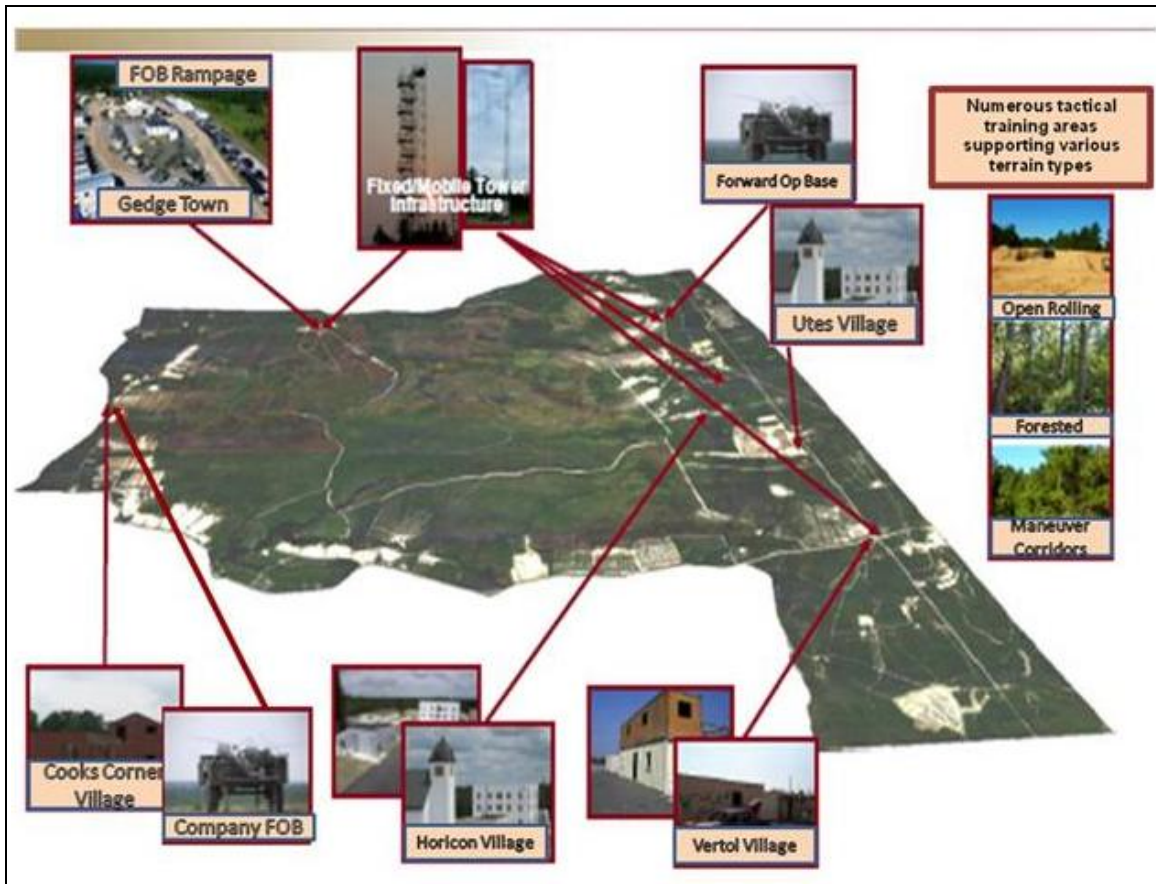
Figure 1. E12 terrain and infrastructure.

Table 1. Scenario infrastructure and function.

Infrastructure Name	Scenario Function
FOB Rampage	Brigade base
Gedge Town	Friendly
Company FOB	Distributed HQ
Cook Village	Friendly
Vertol Village	Neutral
Horicon Village	Insurgent enclave
Utes Village	Hostile

2.1.2 Personnel

The question of personnel use is posed as a matter of design course, and in general answers can range from nonuse to complex interaction. Scenarios may bring contextual relevance for actors other than people within an experiment; for instance, computer code or sensor hardware. In these cases, the scenario design does not pass beyond the parameters of a storyline inclusive of situations where the technologies have function. In the other extreme, a scenario may orchestrate the actions of many hundreds of people during a force-on-force training event like those that

occur at the NTC. No matter the scope, the concept of fidelity governs the level of detail defined within a scenario; the finer the details, the higher the fidelity. Again, using the NTC as an example, the scale is large and the fidelity high. During an NTC exercise scenario, hundreds of Soldiers and threat role players with realistic equipment interact in military situations to replicate real battle for training, generating detailed data and communications traffic. The result is the replication of a fully deployed U.S. Army brigade of roughly 3500 personnel.

The E12 exercise features a finely detailed, high-fidelity scenario that describes the actions of a small military unit, a squad, acting within an area of interest to a larger parent military unit, a brigade. The E12 squad included 14 Soldiers lead by a senior noncommissioned officer (NCO) and contained a mixture of lower-ranked NCOs and privates. All of the NCOs had experienced at least one combat COIN tour in either Iraq or Afghanistan. Coming from the same military unit, these soldiers worked well together and performed well within the combat vignettes of the E12 scenario.

Since the action was taking place within a brigade area of interest, each day the squad rotated two personnel for operation of the brigade tactical operational center (TOC) information fusion cell. These personnel performed two functions. First, they operated new technology applications and equipment during the exercise and provided written and verbal feedback to the developers. Second, they performed more traditional military TOC functions, to include interacting in real time with the squad in the field via Blue Force Tracker (BFT) system communications and pre-briefing the squad using on-hand intelligence about the daily mission. Additionally, two medical personnel and a helicopter crew supported the insertion of several developmental technologies during three days of the exercise. Figure 2 shows additional personnel operating new technologies to treat casualties. These new technologies were also used during a "dust off" evacuation from the helicopter.

The E12 scenario also featured an interactive opposition force (OPFOR) consisting of eight personnel split into two teams. The first team interacted with soldiers to provide information and non-confrontation COIN experiences (figure 3).

These interactions where designed to give the Soldiers a chance to gather intelligence in a realistic manner. The second team interacted with the Soldiers using combative force. In the final exercise event, several E12 staff joined the OPFOR to provide a larger, more diverse engagement in a village.

Figure 2. A medical team using new
technology.

The use of computer military simulation provided a wider operational perspective. The E12 simulation environment portrayed personnel and equipment for the remainder of the U.S. Army brigade. These forces were placed on the terrain using internal automation but were able to observe real and virtual OPFOR vehicle movements, provide artillery support for real and virtual forces, and generate and send military situation reports, spot reports, and sightings.

All E12 combat action was governed by staff observers who orchestrated the daily battle rhythms, ensured that Soldiers and support preparation, and controlled movement within the exercise area. During a combat situation, Soldiers and threat weapons used training devices capable of "inflicting" a simulated wound on a Soldier. Additionally, wounds could be caused by simulations providing fire support. Staff observers acted as judges to designate casualties and ensure that vignette situations developed fully enough for technology development purposes.

2.1.3 Equipment

Replication of military operations requires equipment to be similar to that used in actual combat. The soldiers participating in E12 exercise events used standard issue combat dress and gear including backpacks and body armor. On a daily basis, E12 staff issued weaponry, such as Rifles and grenades rigged for nonlethal training. When operating in the field, soldiers had access to several high-mobility multiwheeled vehicles (HMMWVs) for transport and could call for artillery indirect support from simulated units. Additionally, as shown in figure 4, the Soldiers carried several devices under development for field testing and use in scenario activities.

Figure 3. OPFOR in traditional garb.

Figure 4. Soldier operating new smart
phone technology (*6*).

The OPFOR used a verity of training devices to replicate direct and indirect attacks on squad soldiers. These ranged from "dummy" plastic weapons, shown in figure 5, used for search and seizure events at traffic checkpoints, to working mortars, firearms, and vehicles for combat events. E12 scenario vignettes included a range of encounters from benign interviews at traffic checkpoints to violent, complex attacks on soldiers. These attacks took the form of improvised explosive devices (IEDs), including vehicle, personnel-borne, and traditional, as well as indirect and direct weapon fires.

Figure 5. Typical OPFOR equipment.

2.2 E12 Scenario Event Structure and Flow

The MLS 1.0 scenario provides the strategic and operational reasons for U.S. forces to be present in a COIN situation. Building a tactical scenario from this framework, the E12 staff postulated a condensed combat cycle of that normally experienced by U.S. troops deployed in Afghanistan. The E12 scenario takes place in an area where U.S. troops had arrived sometime earlier. FOBs had been established as places of U.S. power in the region, but could directly control only the area immediately near the physical compounds. The U.S. mission goals of regional economic and political stabilization depended upon the actions of small Soldier teams able to integrate into the local population. Specifically, these small teams were to develop local intelligence sources and properly coordinate initiatives meant to guide the population away from support of terrorist factions. The E12 soldiers represented one of these teams.

The E12 scenario begins with normative relations between soldiers and the civilian population. The presence of terrorists in the area, such as Taliban factions, is known but U.S. troops' efforts have reduced their influence. However, the terrorists will attempt to regain lost influence. Throughout the scenario, U.S. troops try to maintain the situation using a variety of methods, from providing funded improvement projects to actively tracking and prosecuting members of terrorist groups. Violence becomes more prevalent as tensions build between U.S. and terrorist efforts to influence the population toward their conflicting goals. This takes the form of an eight-day exercise cycle of progressive violent reaction until finally the terrorist groups must directly confront the Soldiers or be so undermined that they cannot function within the focus area.

E12 scenario events are detailed in daily fragmentary orders (FRAGO) issued to the E12 squad during a battle update briefing. The nominal chain of command issuing these orders is the brigade, through the battalion, company, platoon, and finally to the exercise squad. Appendix A contains an example FRAGO. Also, the OPFOR receives a daily FRAGO delivered by the observer staff. These consist of a flexible plan coordinated with the squad FRAGO that enables the OPFOR to provide scenario events to enable technological goals. Appendix B contains an example OPFOR FRAGO.

The U.S. squad is ordered to perform typical mission-related tasks during the exercise. These tasks include performing presence patrols in local villages, establishing traffic control points at various locations, and reacting to OPFOR operations in their area. OPFOR interactions can be

varied, from mild (a civilian trying to get from one village to another for his job), to dangerous (uncovering concealed weapons during a vehicle search), to combative (the squad being directly attacked by militants). Each day, the interactions between the OPFOR and the U.S. forces are subject to greater stress and increased combativeness until the final event featuring a complex attack that includes a combination of IEDs and indirect and direct fire combat.

E12 events were designed to support military field testing of developmental technologies. Soliciting soldier feedback and guidance early in the technology developmental process ensures the best possibility of a successful project end state. As the final customer for technologies, Soldiers will operate devices, use software applications, communicate on networks with new architectures, and report their experiences directly to developers. Further, Soldiers can offer guidance on technology utility within a military context.

In order to test the new technologies, squad events covered a tactically diverse set of events, including casualty-producing interactions. Some of the E12 events were designed to test a specific technology; for example, squads interacting with civilians enabled the use of handheld devices for information gathering and communications. Additionally, E12 featured a functional brigade TOC, which became a focal point for information fusion and military intelligence functions meant to guide the squad on its ground missions. In essence, the squad became both a collector of information from the indigenous population, enabling information fusion, and a benefactor gaining an improved understanding of the population via the fusion methods employed in the TOC.

HDPT is a visual analytical data fusion software application program meant to assist military intelligence personnel in developing a better understanding of the population within their AO. HDPT was included in E12 as a technology nearing the transition from a conceptual research project to becoming a part of a developmental program. HDPT was the centerpiece in an E12 technology demonstration meant to characterize the intelligence utility of the application. To support the demonstration, a vignette and supporting data were developed to accommodate the inclusion of HDPT into the brigade TOC data fusion during the E12 field event.

3. HDPT Overview

ARL has developed a data-fusion methodology and a software application to enable intelligence analysis of individuals or entities based on their similarity to key reference population groups. The software implementation of the methodology, HDPT, is nearing transition to a development program of record. HDPT provides an estimation of an individual's probable threat orientation based on resemblance to known enemy and friendly group members. The calculation of personnel orientation in near real time supports actions taken by mission units with regard to

individuals encountered on the battlefield and, more generally, develops an improved understanding of the population within a unit's AO.

Some of the commander's priority intelligence requests can center on similarity. That is, given a set of data representing an entity, such as a person, place, thing, or, perhaps, an action, whom or what does that entity resemble within a known population? A primary battlefield repository for entity data is the Global Graph used as part of the Distributed Common Ground System-Army (DCGS-A) database. A Global Graph entry contains hundreds of descriptive attributes to represent persons, places, events, and actions. Unfortunately, the database may contain many entities with few known or filled-in data fields, resulting in incomplete or sparse information of varying reliability and differing data types.

In fact, collected data referring to a randomly encountered, previously unknown individual is normally sparse, limiting the usefulness of most mathematical techniques in similarity analysis. However, one technique that seems applicable to analysis of sparse data is multidimensional scaling (MDS). MDS is a dimensionality reduction technique that is tolerant of and applicable to large sets of high-dimensioned, sparse, non-Gaussian data. Further, MDS is complementary to the more traditional functional link (graph) analysis that focuses on relationships derived from human intelligence (HUMINT)

Similarity analysis can provide insight when there is insufficient data to support a traditional functional link analysis. Functional link analysis is useful in the evaluation of an individual's value to a group. Value relationship graphs reflect an individual's role within a group as derived from the knowledge of functional links, such as "A controls B and C," "B provides a service or materiel to D," "C is in touch with D and E by cell phone," etc. An issue with functional link source analysis is the requirement for knowledge of an individual's "hidden" actions and social milieu. If an analyst has the HUMINT data (such as intercepts and informer reports) necessary for functional analysis, he/she can deduce that the subject is a person of interest without formally employing functional link analysis. In contrast, HUMINT is normally not readily available or easily accessible over the short time period of most random encounters, reducing the usefulness of functional link analysis during mission execution. In the absence of HUMINT data, determining a randomly encountered person as a high-value individual (HVI) may be accomplished using MDS similarity analysis based on observables.

Intelligence collected during an encounter with an unknown person, such as observational information, data elicited through combat questioning, and ethnographic information, provide insights even without the deeper intelligence knowledge required for functional link analysis. Further, when sufficient HUMINT and time permit the use of functional link analysis, the application of similarity analysis may provide synergistic insights useful in confirming the nature of an individual.

Entities with many attributes are difficult for humans to process. The extension of similarity analysis to incorporate large attribute sets requires methods for evaluating a single individual's

resemblance, within arbitrary n-spaces, to the characteristics of a larger, known group of individuals. MDS techniques facilitate the use of large yet sparse data sets to indicate possible group affiliations. HDPT visually shows the resemblance of individuals to different groups via clustered graphs derived from large sets of data. Further, HDPT can act as a data filter or an additional stand-alone tool to investigate a possible hostile group. This implementation of MDS methodology is a step toward estimation of intent.

The example in figure 6 depicts a 3-D HDPT graph of a data set representing several population groups (colored nodes). The MDS algorithm has reduced a set of many-person attribute dimensions, in this case 13 attributes per person entity, into a 3-D visual analytic. The distance between any two colored nodes is an indication of similarity between them. Clusters in the scatter plot, as shown in figure 7, is an indication of group affiliation through similarity. For instance, attribute data gathered for terrorists, shown as green nodes in figure 7, tend to cluster, meaning that persons within this group have attribute data in common.
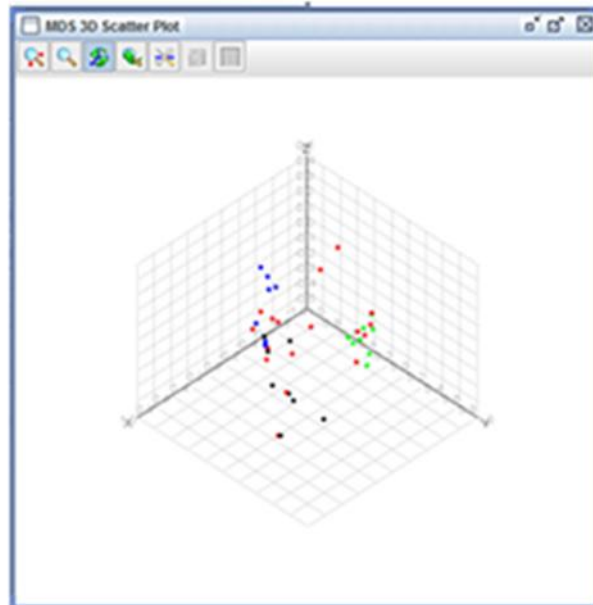
Figure 6. HDPT 3-D plot of person data.
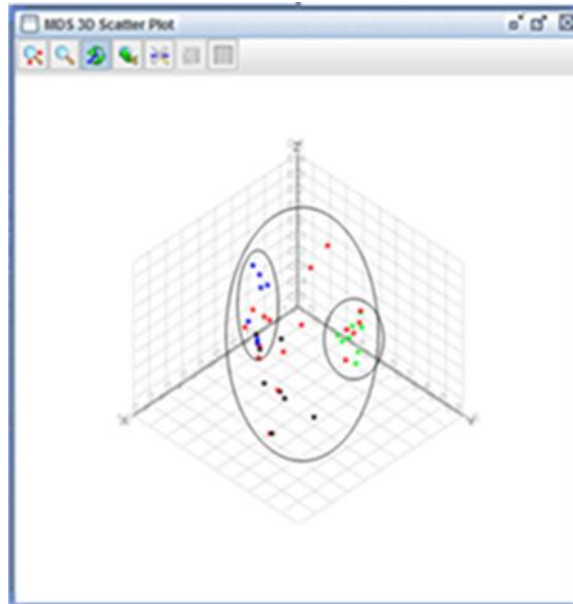
Figure 7. Similarity groups identification.

Tactical application of this technique will give Soldiers a tool to quickly discern the importance of encountered individuals and suggest actions. Some data collected on unknown persons, represented as a set of red nodes in figure 7, suggest immediate affiliation possibilities with known groups. Further, the collected data may be indirect indicators such as the mosque attended or number of family members. Other unknown persons may not directly align with known groups, suggesting data gaps that may become the subject of continued intelligence efforts to uncover. There is even the possibility that new data may indicate existence of a new group.

The prototype software provides both a graphical user interface and a mobile application for accessing, searching, and updating person data stored in the DCGS-A Global Graph for use in creation of similarity-based visual analytics. For instance, figure 8 shows the capability of gathering a person data set for an area of interest using map references. In this case, the data attributes from all persons known to frequent the chosen area will become the input for the MDS algorithm to create a 3-D visual analytic for similarity analysis. MDS algorithms, as employed in HDPT, have the potential of filling a situational awareness gap in tactical missions by providing a timely and improved understanding of the human battlespace. For more information about HDPT, please refer to Richardson et al. (*7*).
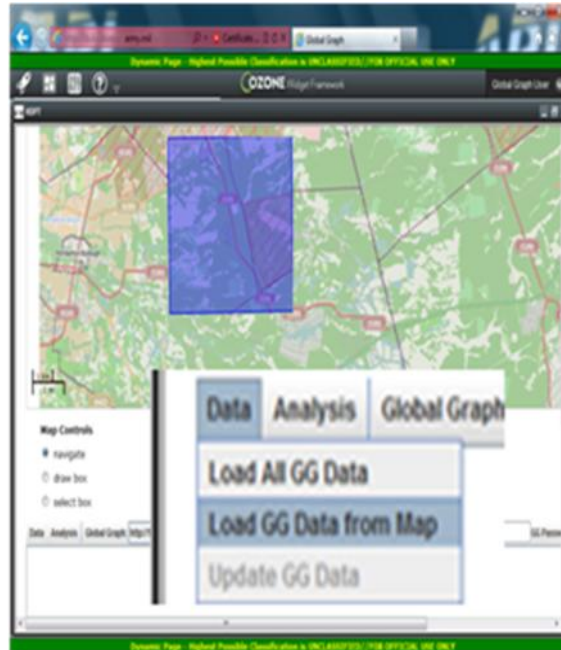
Figure 8. HDPT user interface.

4. HDPT E12 Vignette

Inserting the HDPT into the C4ISR E12 scenario required the creation of a vignette with sufficient content to provide intelligence analysis functions for planned tactical missions while continuing an HDPT technology development thread. The goals of the vignette were to (1) stimulate the HDPT with appropriate data inputs generated through realistic field encounters, (2) seamlessly operate within the existing E12 scenario, and (3) provide a data design to enable value-added Soldier feedback for continued HDPT technology development.

HDPT developmental goals depended on its "realistic and relevant" use within E12 tactical missions. This would provide the best chance for HDPT to operate as theorized and to garner meaningful Soldier feedback. Given that the E12 scenario featured both a friendly squad and hostile actors, the idea of the squad questioning individuals at checkpoints and during presence patrols seemed a good way to retrieve data from the "field." Additionally, squad members could employ the hand-held mobile data input device during these combat situations. In essence, HDPT benefitted from superimposing intelligence information onto existing E12 scenario events.

The HDPT vignette featured a set of data describing individuals within the AO. The data was formatted for storage in the DCGS-A Global Graph database and contained attributes capable of dynamically driving a meaningful HDPT visual analysis. Personnel descriptions within the data were broken into four categories: friendly, criminal, insurgent, and unknown. The first three

groups were designed as references to provide users with a visual understanding of group placement on the HDPT display. The unknown group represented persons that would actively generate data during the E12 events and dynamically change position on the HDPT display.

The vignette was designed to operate differently each day of the E12 exercise with differing data to avoid repetition of analysis outcomes. As many as four threat actors were issued a different set of person data daily. HDPT-related data were uncovered through combat questioning of threat actors during FRAGO mission events and subsequently relayed to the fusion cell in the brigade TOC. The data enabled brigade TOC operators to use HDPT analysis functions to better determine the nature of unknown persons within the AO. As more became known about the questioned individuals, brigade TOC personnel would either generate questions to fill in data gaps or advise field personnel on immediate treatment of encountered personnel. For instance, if data collected during an event caused the HDPT visual analytic to indicate that a person was a likely terrorist, brigade personnel might request the detention of that person.

In early encounters, data returned by threat actors in field events did not strictly adhere to the HDPT vignette design. During the final four days of the E12 exercise, data for unknown individuals not in live play was artificially entered into the DCGS-A Global Graph. The completeness of the entered data adhered to the experimental design and afforded better control of the visual analytic in reflecting ground truth embedded in the HDPT data. The HDPT operators were periodically asked to rate and record their understanding of the status of each unknown person using only the HDPT display. The recording of unknown personnel status ratings was useful in gauging HDPT performance and utility. A formal analysis of these results appears in Hanratty and Heilman (*8*).

4.1   Exercise Vignette Enactment

Enacting the HDPT vignette relied on many of the technical and tactical features provided during the E12 exercise. The HDPT software installation resided on a data fusion cell DCGS-A computer within the brigade TOC facility. Communication of data from field interactions followed two distinct network paths. First, data was transmitted using the BFT system, which is meant to monitor friendly vehicle movements and field events, such as patrol progress. The system features an Email-like service that, during the E12 exercise, provided a direct connection between fielded elements and the brigade TOC. Second, HDPT features a hand-held mobile device data communications system. In preparation for the E12 exercise, the ARL team developed a software mobile application implemented on an Android RAZR Maxx mobile device capable of changing the DCGS-A Global Graph using discovered data. The application is capable of both instantiating a new person and updating an existing person (*9*). All communications from the field were accomplished using the novel E12 network radio, microwave, and 4-G mobile architectures.

The process used to gather person data from the field for the HDPT vignette is shown in figure 9. Initial contact with a person occurs during a checkpoint or presence patrol. Soldiers will ask
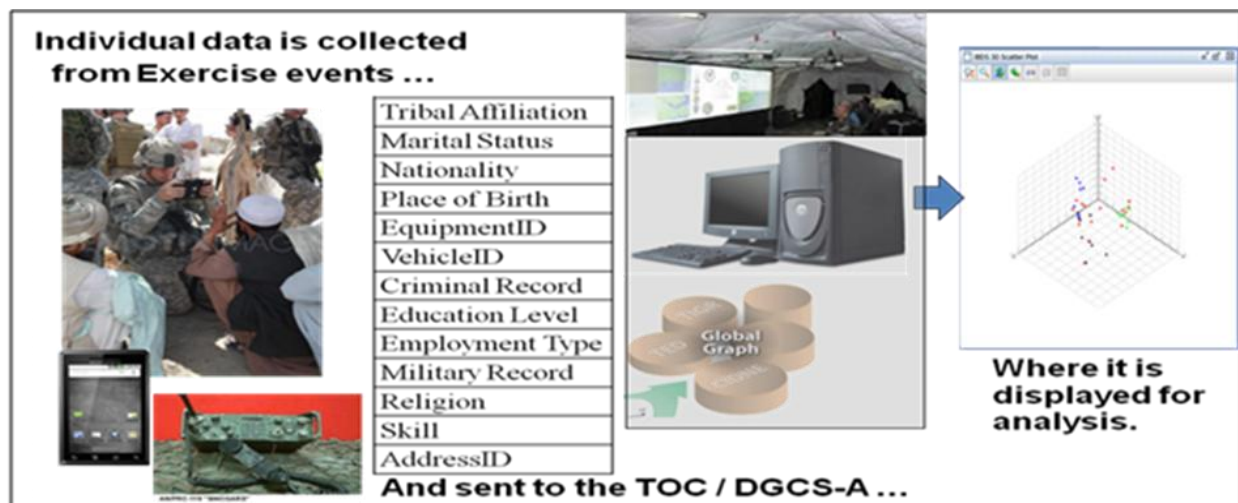
Figure 9. HDPT E12 implementation process.

questions of the person to ascertain data useful in creating an improved understanding of a possible role that person has within the AO. Discovered data is sent to the brigade TOC via the mobile or BFT systems and captured in the DCGS-A Global Graph database. Military intelligence analysts will examine the new data using the HDPT and note changes in the person's similarity alignment with regard to other persons in known groups. The analyst might issue requests for more information gathering on the person or, if the similarity to a known hostile group is strong enough, issue guidance on detaining the person for subsequent action.

The vignette places the HDPT technology into a viable military situation by defining the process of collecting data and using it to develop intelligence on persons encountered in the area of operations. But this is only part of the E12 vignette development. Another significant part is the creation of pertinent data describing these persons that, when collected, causes HDPT to operate resulting in meaningful follow-on activities.

4.2   Input Data Development

The HDPT team created a multiply dimensioned attribute data set describing persons affiliated with several groups presumed to be operational in the E12 exercise area. These groups included personnel considered to be non-hostile (friendly), overtly hostile (terrorists), and locally hostile (criminal). The data set creation process consisted of three stages. Since HDPT includes the DCGS-A Global Graph database as its data repository, the first stage was the determination of DCGS-A Global Graph person object fields for HDPT use. Once identified, all person attribute data within the HDPT E12 vignette had to conform to Global Graph storage structures. The second stage was identifying a set of possible states for each Global Graph person attribute supportive of group membership similarity comparisons within the HDPT visual analytics. Within this stage, specific values were assigned to each attribute describing a total of 39 person records, thus creating E12 vignette data ground truth. The final step was the creation of four role cards containing attribute data for the persons to be encountered during E12 daily FRAGO

missions. These cards were issued to the threat actors as discoverable data for responses to combat questioning.

The daily initial state of Global Graph records representing unaffiliated persons contained unfilled attributes, causing the HDPT visual analytic to show them as not similar to any reference group. As daily FRAGO missions progressed, squad Soldiers communicated data discovered during daily interactions with threat actors to the brigade TOC. This person attribute data was entered into the Global Graph and became available to analysts within the HDPT visual analytic display. A sufficient amount of discovered data caused a visual HDPT similarity response, moving the graphic representation of the questioned person closer to a known reference grouping. Brigade TOC Soldiers then interpreted the new display and made a decision on group membership given their perceptions. Actions resulting from these interpretations included holding terrorists and criminals, not interfering with friendly persons, or requesting additional questioning to uncover attribute gaps in that person's description.

4.2.1 Global Graph

The DCGS-A Global Graph database consolidates information domains concerning "Person," "Organization," "Facility," "Equipment," "Event," and "Reference" data within the DCGS-A data repository. "It also adds Human Social Cultural and Behavioral domains with Society and distinguishes Financial Accounts as a distinct domain" (*10*). Since the HDPT portion of the exercise centered on the discovery of a person's alignment to groups operating in the area, the development team used the Person portion of the Global Graph for data storage and update. The Global Graph Person structure contains 23 different associated data tables amounting to 194 individual fields. The representation of a person within the HDPT scenario required 13 variables used as attributes for similarity comparison. Choosing fields within the Person structure was dependent on several factors, including what made sense in the nomenclature, the reality that some fields were not available for updates within the Global Graph query system, and best fit to data type (ordinal, nominal or binary).

Table 2 shows the mapping of HDPT attribute data to Global Graph Person data fields, listing each HDPT data element and the exact storage location within the Global Graph. The data fields fall into two categories. First, reference fields were used for internal bookkeeping and enabled specific HDPT functions. For example, the "Sighting location" field supported the implementation of the HDPT map search feature. Second, there were 15 data fields used throughout the vignette for similarity comparisons. These were the focus for data collection from field events and provided the input for similarity comparisons within HDPT.

Table 2. HDPT person data elements mapped to Global Graph elements.

HDPT Data Element Name	Global Graph Data Element
Name	Person object: names/full name
Organization	Person object: affiliation/affiliation detail
Subject ID	Person object: identification/document ID
Sighting location	Person object: location/coordinates/latitude and location/coordinates/longitude
Exercise identifier	Person object: remarks/subject
Tribal affiliation	Person object: ethnicity
Gender	Person object: gender
Age	Person object: age
Marital status	Person object: marital status
Nationality	Person object: nationality
Place of birth	Person object: place of birth
Equipment ID	Person object: remarks/details
Vehicle ID	Person object: description/description
Criminal record	Person object: criminal records/verdict
Education level	Person object: education/education level
Employment type	Person object: employment/employer type
Military record	Person object: military record/duty or position
(Person religion) member of	Person object: religions/religion name
Skill	Person object: skills/description
Address ID	Person object: addresses/city

Where possible, the selection of Global Graph Person fields mirrored the HDPT variables. For instance, the "Place of birth" field had the same name in both HDPT and the Global Graph. However, most variables did not map as directly. For instance, the data element "Equipment ID," meant to be a textual name for a piece of equipment normally associated with persons belonging to a specific group, was stored as part of a generic description field within the Global Graph Person data structure. A mapping of this type is essential for tracking data through multiple systems.

4.2.2   Data design for HDPT

The strength of HDPT is its ability to determine similarity between objects with sparse, disparate data using MDS. The application of HDPT within military situations to analyze people requires a data representation that expresses a number of human characteristics in easily attainable and transmitted data elements; essentially, a set of data elements sufficient in quantity to establish a person's group affiliation through similarity. Each person is represented by the set of data elements noted in table 2 with the corresponding Global Graph data storage area shown. HDPT directly queries these Global Graph storage areas for data used to generate a similarity visual analytic.

Assigning types and a set of values to each HDPT data element within the context of E12 was the next vignette development step. A data element "Type" represents both its scope of use within HDPT and limits possible assigned values. The "Value" set for each data element is a range of possible data element states. HDPT data elements type and value sets used in E12 are shown in table 3. The underlined items in the Value column represent the range-specific states possible for a data element. There were two general data element types of HDPT data. The first data element type is termed "Reference." Reference data elements were used for internal HDPT functions, bookkeeping, and vignette ground truth. These five data elements include:

- Organization: Used to denote a person's group affiliation. The color scheme reflects HDPT data visualization for plotted graphic nodes: criminals = green, insurgents = orange, friendly = blue, and unaffiliated = red.

- Full name: Used as an identification (ID) for general reference. Threat actors assumed these names when giving data to squad Soldiers during E12 field encounters.

- Subject ID: Used as an experimental reference for a set of unaffiliated person data. Same as the full name field but simpler to use than the Arabic nomenclature.

- Sighting location: Used as the map location for person sightings. This enables the return of a person set from HDPT coordinate-driven map searches within the E12 terrain area. Actual map locations are: Time Square Village (TSV) ~ 39.9836 LAT/-74.43 LONG, Viet Nam Village (VNV) ~ 39.9783 LAT/-74.4194 LONG, Vertol Village (VV) ~ 39.9727 LAT/-74.4275 LONG, Hanover Village (HAV) ~ 40.0094 LAT/-74.5575 LONG, Cook Corner Village (CCV) ~ 40.0155 LAT/-74.5525 LONG, Gredge Town (GT) ~ 40.0308 LAT/-74.5244 LONG, Utes Village (UV) ~ 40.0458 LAT/-74.4605 LONG, Horizon Village (HOV) – 40.0066 LAT/ -74.4511 LONG.

- Exercise identifier: Used for universal identification within the Global Graph database of all persons in E12.

Table 3. HDPT data element type and set of possible values used in E12.

Data Element Name	Type	Values (Underlined) Entered Into Global Graph
Organization	Reference	C (green): criminal; I (orange): insurgent; F (blue): friendly; U (red): unknown
Name	Reference	Name as data point (used as a label on the visualization screen)
Subject ID	Reference	Shorthand for person full names: S# (used as a label in place of full name for searches)
Sighting location	Reference	Lat/long map location (used for HVI map search) digital numeric data – EG: 39.98/–74.43
Exercise identifier	Reference	Field ID value is: C4ISR OTM
Age	HDPT ordinal static	Person's age in digits
Gender	HDPT binary static	Male (M); female (F)

Table 3. HDPT data element type and set of possible values used in E12 (continued).

Data Element Name	Type	Values (Underlined) Entered Into Global Graph
Tribal affiliation	HDPT nominal	Pashtu; Baloch; Hazara; Tajik
Marital status	HDPT binary s	M = married; NM = single
Nationality	HDPT binary	Not host nation = Muslma; host nation = Afghan
Place of birth	HDPT binary	Born in area = BIA; born outside area = BOA
Equipment ID	HDPT nominal	Pistol, knife, gang colors; bomb, video camera, cell phone; cell phone, uniform, briefcase
Vehicle ID	HDPT nominal	White panel truck, blue motorcycle, silver compact van; blue minivan, grey sedan, brown pickup truck; black SUV, burgundy luxury sedan
Criminal record	HDPT binary	Has one = guilty; doesn't have one = none
Education level	HDPT binary	High; low
Employment type	HDPT nominal	Not employed = NE; white collar = WC; blue collar = BC
Military record	HDPT nominal	Never served; serving; served
(Person religion) member of	HDPT binary	Mild theology = Mld; radical theology = Rad
Skill	HDPT nominal	Photography = PH; writing = WR; electrical = EL; mechanical = ME; computer = CO; driving = DR; financial = FI
Address ID	HDPT nominal	Times Square Vil = TSV; Viet Nam Vil = VNV; Vertol Vil = VV; Hanover Vil = HAV; Cook Corner Vil = CCV; Gredge Town = GT; Utes Vil = UV; and Horizon Vil = HOV.

The second data element type is useful for HDPT analysis and can be one of several subtypes including nominal, ordinal, and binary. A nominal data element includes named items without structure or specific order. An ordinal data element represents a series of data items with order or structure such that a progression is attained. For example, a descending series of numerals that is useful for marking priority. A binary data element has two distinct states. Additionally, a HDPT data element may be "Static." Static data elements represent items that are both known prior to exercise events and unchanged during exercise events. These data elements were useful for setting initial HDPT analysis conditions prior to daily E12 events. Detailed explanations of the HDPT data elements follow:

- Age is an ordinal data element describing the age, in whole years, of a person. The value is static, meaning that it is unchanging throughout E12 events.

- Gender is a binary data element describing the gender of a person. The value is static, meaning that it is unchanging throughout E12 events.

- Tribal affiliation is a nominal data element naming a tribal relationship determined by birth.

- Marital status is a binary data element representing the current marital condition of the person.

- Nationality is a binary data element registering the nationality of a person as either from Afghanistan or some other Muslim county.

- Place of birth is a binary data element representing a person's birthplace as either local or outside of the area.

- Equipment ID is a nominal data element associating certain equipment with individuals. Possessing a piece of equipment is meant as a characterization of a person's moral values and tendencies.

- Vehicle ID is a nominal data element associating certain vehicles with individuals. As certain vehicles have been associated with specific organizations in the area, being sighted using a certain vehicle is meant as a characterization of a person's moral values and tendencies.

- Criminal record is a binary data element answering the question: "Does the person have one?"

- Education level is a binary data element representing a high level of education (high school diploma and beyond) or low (less than a high school diploma).

- Employment type is a nominal data element describing, in general terms, a person's current employment situation.

- Military record is a nominal data element indicating military service status.

- (Person religion) member of is a binary data element characterizing a person's religious orientation, either as radical or milder religious beliefs.

- Skill is a nominal data element detailing a skill that is a person's singular best ability.

- Address ID is a nominal data element showing the name of local village where that person lives.

4.2.3 Crafting an E12 Person Data Element Set

The data element set describing a person thus far is a generic template. Specifically, the data elements and given values in table 3 represent all possible configurations for any specific person. The next step in the process of creating the E12 HDPT vignette was the development of specific personas, each represented by a single collection of the data elements. For ground truth purposes, no matter their initial affiliation status, each person created for E12 contained data indicating membership in one of the criminal, insurgent, or friendly organizational categories. Thus, even the data element sets representing unaffiliated persons were indeed associated to one of these three organizations within the ground truth, or master, data. The HDPT person ground truth data is presented in appendix C.

The HDPT vignette focused on discerning the organizational membership of unaffiliated persons through the gathering of data from field encounters. At the beginning of any E12 exercise day, analysts generated the HDPT display using the entire set of data elements for known persons and only the reference and static HDPT data elements for unaffiliated persons. The HDPT software requires the existence of known data element sets for similarity comparison. The portrayal of similar person data element sets as a visual analytic takes the form of nodal clustering. For example, a cluster of known criminals is shown in figure 7 as a circled cluster of green nodes; each node represents the data element set of a single person. In the case of the E12 HDPT vignette, there are three known categories represented by the "Organization" data element, namely Criminal, Insurgent, and Friendly. Similar persons belonging to each of the three categories formed an analysis cluster. During the exercise day, further unaffiliated person data elements were gathered from squad encounters with threat personnel. The affiliation of these persons would become clearer to analysts as the collected data would cause their HDPT-generated nodes to move closer to an established organizational cluster.

The E12 event was the initial pilot study for HDPT and as such the person data is meant to provide HDPT with optimal conditions for performing as expected. Generation of a relevant HDPT visual analytic for the E12 vignette required that some person data element sets be completely known and nodes representing these persons caused the formation of organization reference category clusters. Therefore, many of the value choices for the person data element sets shown in appendix C reflect a predetermined attempt to cause similarity. Specifically, three eight-person data element sets (24 person data element sets) were created with similarity traits that accorded them organizational category membership. Additionally, for field exercise purposes, 15 unaffiliated person data element sets were created; 5 belonging to each of the three organizational categories. The HDPT vignette contained 39 person data element sets that constitute data ground truth.

Appendix C contains the reasoning behind value choices for each data element in the person set. These value choice strategies embed trends that create similarities between person data element sets. The HDPT visual analytic display reveals these trends through the clustering of person nodes on a graphic display (shown in figure 7). However, for illustrative purposes, an example of a person data element set is shown in figure 10. The subject's name is Bahij As'ad Tawfeek, a male subject. He is 28 years old, married, and a member of the Pashtun tribe. Bahji was born in the area and is an Afghan national. Soldiers have observed him wearing a military-like uniform and around a burgundy luxury sedan. He has no criminal record, is highly educated, is considered holding down a white collar job as a mechanic serving in the local military. He belongs to a milder religious sect where he lives in Time Square Village.

Name	SubID	Location	Org	Age	Gen	TA	MS	Nat	POB	Equip	VehicleID	CR	Ed	Emp	MR	Rel	Sk	Add
Bahij As'ad Tawfeek		39.98 / -74.43	Friendly	28	M	Pastun	M	HN	BIA	Uniform	Burgundy Luxury Sedan	No	High	WC	SS	Mld	ME	TSV

Figure 10. Example of an HPDT person data element set.

HDPT compares this informative data with that of data representing other persons in the vignette to develop a visual analytic representation of him on a computer monitor screen. The single visual analytic node representing Bahji is part of a reference category of individuals with known group affiliations; in his case, a Friendly organization. His node, along with the other 24 person data element sets representing the vignette's three reference categories, was used by analysts on each exercise day for comparisons to unaffiliated persons as data elements were discovered.

The 15 unaffiliated person data element sets contain values with the embedded trends discussed in appendix C. Yet, to reflect their unaffiliated status, the nodes representing them on the HDPT visual analytic must not immediately appear as significantly similar to an established category. Retention of only the Age and Gender data elements for unaffiliated persons as input to HDPT resulted in the desired dissimilarity. Nodes representing unaffiliated persons on the HDPT visual analytic appeared between the established categories with no discernible membership. To support the E12 vignette, the ARL team returned the Global Graph person database to the HDPT initial visual analytic state each exercise day (shown in figure 11). The final data design contains a representative person set with characteristics supporting the HDPT visual analytic. The person set features both distinct organizational reference clusters and unaffiliated neutral persons with associated ground truth data.

As ground truth data is discovered during the exercise, neutral person nodes became aligned with those in reference groups. Figure 12 is a depiction of the HDPT visual analytic for a person resulting from a typical day of data collection. The person node of interest is shown in yellow with lines connecting the three most closely aligned persons belonging to reference groups.

The person data set contains ground truth that places all neutral persons within a specific reference group. This configuration supports intelligence analysis efforts through a period of data discovery during the exercise. As enough data was gathered to determine a person's group affiliation, the intelligence team became better able to direct tactical response when these individuals were found at exercise checkpoints or presence patrols. Such actions might include additional questioning or even detention of the individual. Analysis of the soldier's ability to predict the reference group membership of a neutral with both partial and full data present in the HDPT analytic is left to a subsequent report.
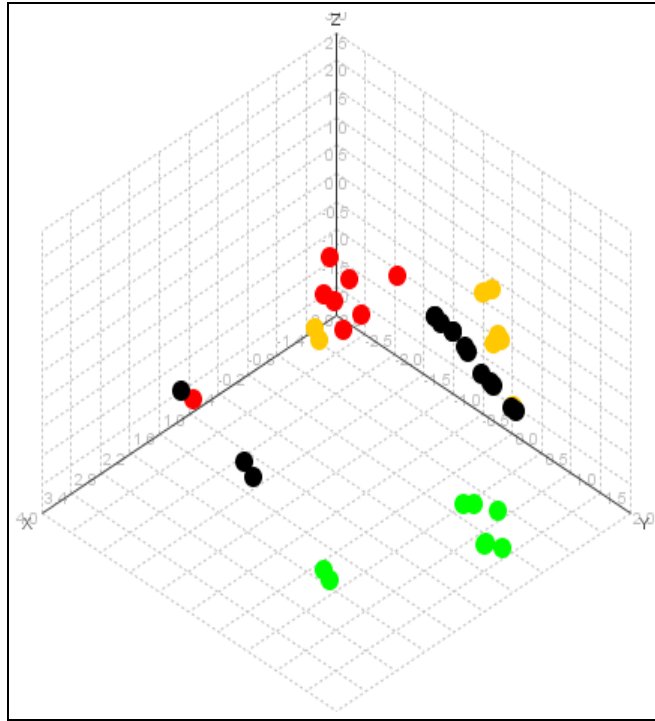
Figure 11. HDPT visual analytic daily initial state (*6*).
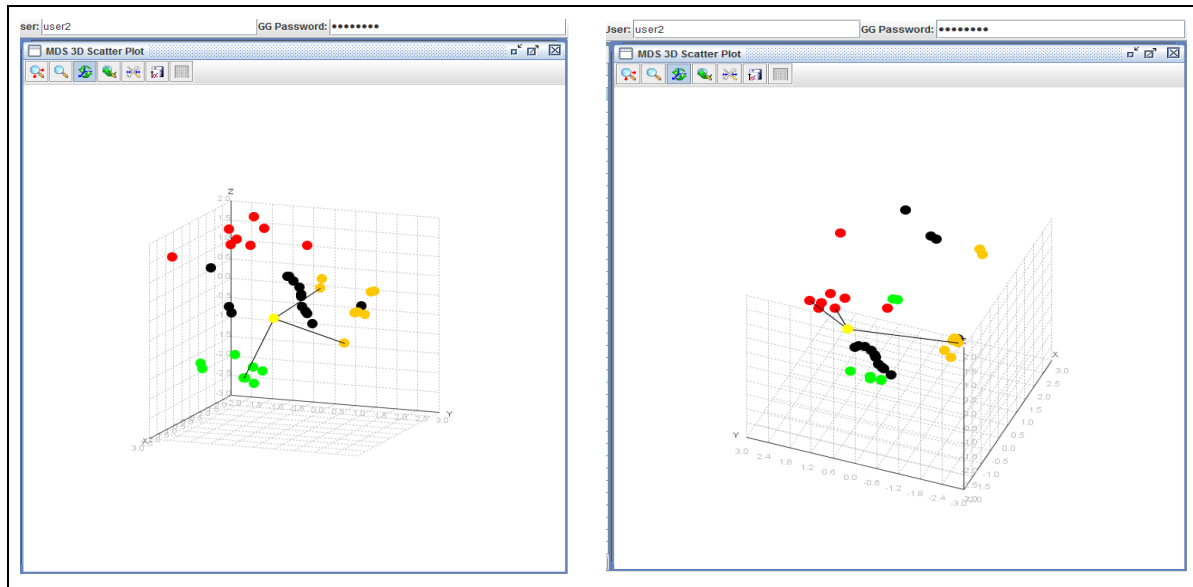
Figure 12. Two panels depicting a person's position after morning data collection (left) and afternoon data collection (right).

Figures 11 and 12 represent a use case for the HDPT visual analytic. Beginning in figure 11, the person node is located amongst the black nodes in the initial neural position. The result of applying data collected during the exercise morning events is shown in the left panel of figure 12.

The person of interest is colored yellow with the three most similar person nodes belonging to reference groups connected with lines. These reference persons are the most like the person of interest and are meant to be used as a guideline for analysis. In left panel of figure 12, the person of interest is most like two friendly persons and one criminal, perhaps leading to the conclusion that the person is not a threat. However, after more data is entered during exercise afternoon events, the visual analytic changes as shown in the right panel of figure 12. The added information causes a shift in position with the person of interest now connecting to two insurgent nodes and one criminal node. The right panel of figure 12 indicates a person that should be detained when found.

The person node depicted in figure 12 represents a challenge for analysis in that reported data does not provide a clear-cut, consistent understanding of an unaffiliated person from morning to afternoon. Unclear data is a realistic condition found daily in military analysis. While the application of HDPT to unclear data is not infallible, the tool will provide a user with a sense of which attributes are known and which are still being sought. Additionally, as each new piece of data is collected, HDPT will process this and quickly provide an accurate similarity analytic that will enable near real time response by soldiers encountering a person of interest.

In fact, ground truth for the individual portrayed in figure 12 is membership within the insurgent group. The generation of situations such as the example above is achieved by revealing only a portion of the ground truth data. In this case, three randomly chosen data items in each of the morning and afternoon events. Partial data collection extended the usefulness of the data set for testing HDPT functionality.

4.2.4 Role Card Development

The HDPT unaffiliated person data sets contain 13 elements that were discoverable during E12 squad mission FRAGOs. Demonstration of HDPT utility required the maximum amount of discovered data elements for input. Maximization of data inputs under the constraints of two to four threat personnel participation during any exercise activity caused an artificial division of the unaffiliated person category.

To prepare for fullest participation, four unaffiliated person data element sets were chosen at random to be role played by available threat personnel during any exercise day. Additionally, to increase the amount of data inputs from exercise encounters, two other unaffiliated person data element sets per role-played person were chosen at random. These became discoverable as persons known by a role-played person. In summary, each exercise day, HDPT person data element sets supported up to four role-played unaffiliated persons, each knowing data elements describing two additional unaffiliated persons, thus using 12 of the available 15 unaffiliated person data element sets per exercise day.

Conveying the data elements to squad Soldiers was a matter of asking questions of threat personnel met during patrols and at traffic control points. There was no deception but threat

personnel would only respond with specifics when asked, such that the completeness of returned data might differ from day to day. Still, there remained a possibility that Soldiers might over time learn to associate the true nature of an unaffiliated person with that person's name. To prevent this, a random scrabbling of unaffiliated person names occurred every two days during the nine-day exercise. The resulting person data element set established a new pattern of names to organizational group affiliations meant to prevent squad soldiers from associative learning.

For the purposes of closely tracking data element inputs from exercise events, person data element sets were divided into two subsets. The first subset of person data elements were personal descriptors and included tribal affiliation, marital status, nationality, place of birth, noted equipment, criminal record, and religion. The second subset of person data elements were personal qualifications and included associated vehicle, employment type, military record, skill, address, and education level. Since the relay of 39 data elements per person per day would become an arduous task for E12 threat actors, the amount of reported data elements was reduced from 13 to 6 for each of the two "known" unaffiliated persons. The remaining data elements were randomly picked using 3 of these from subset one and 3 of these from subset two. This resulted in the reduction 14 data elements.

Breaking the data into subsets provided an opportunity for further exploration of HDPT visual analytic usage. Generally, the collection of data element values from field events is a sequential process resulting in an accumulated set of data elements over time for similarity calculations on unaffiliated persons. The E12 exercise operated daily in two distinct field events, one in the morning and one in the afternoon. The team hypothesized that presenting data from the different groups in differing orders may lead to different rates of analyst comprehension of person affiliation. For any given morning or afternoon field event, threat actors were given daily instruction to reveal person data elements from only a specific subset. While the results of this study are presented in Hanratty and Heilman (*8*), the available data seemed to generate differing analyst observations.

The development of person data element role cards provided a daily study guide for threat role players and ensured an accurate accounting of data element entry into the HDPT visual analytic from field events; namely, daily exercise ground truth. Given HDPT participation in nine E12 exercise days and the possibility of their being four threat actors active in field events during that time span, the development of 36 role cards followed. These appear in appendix D.

As an example, figure 13 shows a threat role card. The numbered points indicate threat role card sections that contain person data elements, information to orient a role player, and internal references for data tracking purposes. The first point is a sequenced numerical field used to uniquely identify a threat role card. The second point indicated the day for that card's intended use, the name of the unaffiliated person role, and the alternate designator for that person. The third point is a threat actor motivational section containing a short description of the person's history and a general association with known persons listed at point six.

② Day 2 – Husain Mansoor El-Hashem Role Data Inject Card (S9) **① CARD 8**

③ Role Player Use ONLY
Background: Husain is an avid reader of insurgent literature for his intelligence-related military job. He knows of Amirmoez by his writing and research. He also know El-Ghazzwy from his car pool for work.

④ C4ISR E12 Role Data Card 8 – AM	**C4ISR E12 Role Data Card 8 – PM**
Tribal Affiliation: **Tajik**	Associated Vehicle: **Burgundy Luxury Sedan**
Marital Status: **Single**	Employment Type: **WC** (Blue Collar)
Nationality: **Afghan**	Military Record: **Still Serving**
Place of Birth: **BIA** (Born in area)	Skill: **ME** (Mechanical)
Noted Equipment: **Uniform**	Address: **UV** (Utes Village)
Criminal Record: **None**	Education Level: **High**
Religion: **MLD** (Mild) **⑤** T1	T2

⑥ C4ISR E12 Known Data Card 8 – AM	**C4ISR E12 Known Data Card 8 – PM**
Sami Mis'id El-Ghazzawy **(S8)**	Sami Mis'id El-Ghazzawy **(S8)**
Military record is **Still Serving**	Tribal Affiliation is **Pastu**
Education Level is **High**	Marital Status is **Single**
Associated Vehicle is **Burgundy Luxury Sedan** **⑦** T2	Religion is **Mild** (Mld) T1
Khaliah Qismat Amirmoez **(S3)**	Khaliah Qismat Amirmoez **(S3)**
Skill is **WR** (Writing)	Criminal Record is **Guilty** (Has One)
Address is **CCV** (Cook Corner Village)	Tribal Affiliation is **Tajik**
Employment Type is **NE** (Not Employed) T2	Place of birth is **BIA** (Born inside Area) **⑧**

Ropp K   Master Listing

Figure 13. A typical HDPT person data element threat role card.

The fourth point is the person data element section for the threat role. The data elements are broken into two sections, one to be revealed by the threat role player during morning E12 events and the other revealed during afternoon E12 events. Data elements in each section exactly match those of the two created subsets noted earlier. The data element values are analogous to those found for the person in appendix C. The fifth point is an indicator of the data subset represented in the section. The nomenclature "T1" indicates the first data subset and the nomenclature "T2" indicates the second data subset. In the example, the AM section is from the first subset and the PM section is from the second subset.

The sixth point is a section listing data elements describing two other persons known by the role player. The data elements are broken into two sections, one to be revealed by the threat role player during morning E12 events and the other revealed during afternoon E12 events. Each of these sections is further broken in two specific sections for each known unaffiliated person whose name appears. Data elements listed for each section exactly match those in the two subsets mentioned earlier. However, only three data elements are listed for each known person. The data element values are analogous to those found for the person in appendix C for the named person. The seventh point is an indicator of the data subset represented in the section. The nomenclature "T1" indicates the first data subset and the nomenclature "T2" indicates the second data subset. In the example, the AM section is from the second subset and the PM section is from the first subset. Finally, the eighth point is an indicator of the randomized name list in use for the role card. The term "Master Listing" indicates that the personnel naming convention in effect for this card mirrors data elements in the initial configuration as is shown in appendix C table C-1. There were four other name lists used during E12 and these would appear with nomenclatures of "Master Listing + 1" through "Master Listing + 4."

HDPT vignette role cards enabled data collection through squad combat questioning by providing a consistent set of answers and provided increased structure to E12 field events by shaping threat characters. The squad gathered data that provided update the HDPT visual analytic originated from these cards. Additionally, threat personnel access to role card data describing organizational membership enabled the actors to accurately shape their interactions with the squad. For instance, insurgents were uncooperative whereas friendly actors tried to assist the squad. The threat role cards enabled coordination between E12 squad events and HDPT visual analytic analysis at the brigade TOC.

4.2.5 Role Card Implementation

The implementation of role cards within the HDPT vignette began with issuing them to the exercise threat force actors. The ARL team asked the actors to memorize data role card data according to the numbering provided in appendix D. For instance, the first four role cards were available on day 1 of the exercise. Due to actor availability, only the first three role cards were used during any exercise day.

Each card contains data on three individuals making input possible for 12 nodal display changes within the HDPT visual analytic. However, the ARL team created only 15 distinct unaffiliated person data attribute sets for actor use during the HDPT vignette, making reuse of these data sets a necessity. The role cards show the unique person data attribute set in use through an alternate designation listed next to each name on the card in the form of "S##." The person data set rotation used during E12 is summarized by the rotational schedule as shown in table 4.

Table 4. The rotational schedule for person attribute set usage during E12.

DAY	1st Card Main	1st Card Minor	1st Card Minor	2nd Card Main	2nd Card Minor	2nd Card Minor	3rd Card Main	3rd Card Minor	3rd Card Minor	4th Card Main	4th Card Minor	4th Card Minor
1	S4	S13	S1	S12	S2	S15	S8	S7	S6	S7[a]	S14	S10
2	S13	S1	S2	S5	S7	S11	S14	S12	S15	S9	S8	S3
3	S12	S7	S2	S8	S10	S14	S15	S1	S13	S11	S9	S3
4	S15	S1	S8	S14	S13	S2	S10	S3	S7	S5	S12	S4
5	S14	S1	S3	S8	S9	S2	S13	S11	S4	S7	S10	S5
6	S14	S12	S9	S1	S2	S13	S10	S5	S15	S12[a]	S7	S6
7	S7	S8	S4	S2	S15	S13	S1	S10	S3	S6	S12	S11
8	S7	S8	S13	S3	S1	S10	S15	S14	S4	S6	S5	S9
9	S7	S14	S10	S15	S1	S8	S6	S12	S11	S9	S8[a]	S3

[a]Person data attribute set repeated errantly, but fourth card not used on day 1.

Soldiers obtained role card data by questioning threat actors during field encounters. They transmitted the data to the TOC using both the BFT system and an HDPT automated mobile device system. Use of the BFT depended on a manual transference of the collected data from written notes into an electronic mail message. The message was then sent to the TOC, where the information was again manually transferred into the DCSG-A Global Graph system to change the visual analytic. The second method utilized an application program deployed on a mobile cell phone device. The application provided soldiers with appropriate data fields and pull-down menus that helped guide their questioning and accurately recorded collected data directly into the DCGS-A Global Graph. In general, the second method provided more accurate data communications, but the lack of cell network access to all exercise areas necessitated the use of both methods. Data was received in the TOC from the field on all exercise days.

5. Conclusion

ARL participation in the C4ISR E12 exercise enabled HDPT to function as an intelligence analysis tool within a relevant military context. HDPT technological development benefitted from participation in two main ways. First, the exercise enabled Soldiers to comment on the HDPT utility within a tactical environment context. These comments resulted in HDPT improvement by driving immediate on-site modifications to the both the user interfaces and internal analytic functions. Second, use under field stress conditions allowed for the estimation of HDPT value to tactical intelligence efforts.

The military vignette developed for HDPT inclusion in E12 had to easily integrate into the overarching exercise scenario and provide military relevance for the HDPT technology concept demonstration. The HDPT vignette provided the military setting that supported the use of

DCGS-A Global Graph data, integrated well into the E12 scenario, and enabled Soldiers to participate by both collecting data from events and directly operating the HDPT for situational analysis. The collection of military intelligence data included in the vignette was easily accommodated as a part of squad events and in fact assisted threat actors in better assimilating their roles in the scenario. Additionally, the vignette enabled soldiers to perform a new analysis method for the determination of a person's threat group membership that effected squad events as these occurred. As a result of analysis, Soldiers at the TOC could directly address the treatment of encountered persons or direct the squad to collect more data on a person while in contact. Soldiers agreed that these insights were useful in exercise events.

The military vignette also supported a detailed examination of HDPT analysis features. Soldiers were able to record their understanding of a person's affiliation for various states of data availability. A comparison of these records to the ground truth of military vignette data will reveal insights about the HDPT visual analytic utility and effectiveness. The HDPT vignette was successfully utilized to integrate HDPT into the C4ISR E12 exercise and to drive the examination of a new intelligence technology under militarily relevant conditions.

6. References

1. Hartman, W. J. *Exploitation Tactics: A Doctrine for the 21st Century*. School of Advanced Military Studies, U.S. Army Command and General Staff College: Fort Leavenworth, KS, 2008.

2. C4ISR On-The-Move Testbed 2005 Experiment Plan, RDECOM CERDEC C4ISR Special Projects Office, Fort Monmouth, NJ, 2005.

3. Brown, J. W.,Multi-Level Scenario Module 1: 7th Division, TRADOC Analysis Center, Fort Leavenworth, KS, 2007.

4. Anonymous, PD C4ISR & Network Modernization. CERDEC. http://www.cerdec.army.mil/directorates /c4isr.asp, 2012.

5. Alberts, D. S.; Stenbit, J. P.; Wells, Linton II. Code of Best Practice Experimentation, Department of Defense Command and Control Research Program, 2002.

6. Mittrick, M. Smartphone Application Using DCGS-A Global Graph for Exploitation, currently being drafted as an ARL TR, projected 2013.

7. Richardson, J., Mittrick, M, Lee, M; Lessons Learned With a Global Graph and Ozone Widget Framework (OWF) Testbed, currently in draft as an ARL TR, projected 2013.

8. Hanratty, T.; Heilman, E. Heterogeneous Data Proximity Tool: A Field Study, currently being drafted as an ARL TR, projected 2013.

9. Kode, P.; Arellano, R. User Guide Global Graph 1.4.6, Potomac Fusion, November 2011.

10. Zimmerman, R. J; Smith, R. FRAGO Record Run 3/4 – Patrol Utes Village /Checkpoint, E12 Briefing Slide, Fort Dix, NJ, July 2012.

12. Haahr, Mads, Randomness, and Integrity Services Limited. http://www.random.org/, Dublin, Ireland, 2010.

13. Campbell, M. Behind the Name. http://www.behindthename.com, 2009.

Appendix A. Example E12 Squad Fragmentation Order

The fragmentation order (FRAGO) shown in figure A-1 is based on the standard U.S. Army mission operations order and provides the E12 squad with information about their daily activities. FRAGOs are meant to drive local action by providing specifics that are more generally covered in the unit's operations order. The daily FRAGO contains three sections, one that provides situation and terrain information, one that describes the implementation of permanent changes to the standing operations order, and one that explicitly provides the portions of the mission to be executed during the exercise.

Figure A-1. A typical FRAGO for describing E12 squad daily exercise activities.[1]

"FRAGO Record Run ¾," shown in figure A-1, contains the three sections of an exemplar FRAGO. The first section, "Situation," contains notes on significant situational changes in the operational area as designated by the higher echelon unit, in this case the battalion issuing the FRAGO. In the exemplar, there are no significant situation changes noted. The second section, "Mission," provides a place for the battalion to note permanent changes to the mission orders for the unit. Again, in the exemplar, there are no significant changes to the mission.

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[1] Zimmerman, R. J.; Smith, R. OPFOR FRAGO STX 5/6 – AFP 6/7 and RG 85, E12 Briefing Slide, Fort Dix, NJ, July 2012.

The third section, "Execution," assigns specific tactical actions for the E12 squad. The Execution section drives the E12 squad's activities during the daily exercise period and contains three sections. The "Concept of Ops" section will detail changes in force posture. For instance, the unit may be advised to prepare for increase hostilities or of a change in command emphasis on operations. The exemplar records no "Concept of Ops" changes. The "Tasks to Maneuver Units" section contains explicit daily activity instructions in the form of tasks (T#), the purpose for those listed tasks (P#), and related information. In the exemplar, the E12 squad will in one day conduct a presence patrol of Utes Village followed by the manning of a traffic control checkpoint at a different location. The third section identifies the priority information requirements (PIRs) requested by higher echelon units. Answers to PIR questions yield information deemed necessary for an improved understanding of an operational area. In the exemplar, information is requested about several persons of interest who are identified by name and the report of significant threat activities in the area.

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Appendix B. Example E12 OPFOR Fragmentation Order

The fragmentation order (FRAGO) shown in figure B-1 provides the E12 Opposition Forces (OPFOR) with instruction for their daily activities. The implementation of a formalized OPFOR instruction is a novel feature of the E12 exercise. The document established a common understanding amongst OPFOR personnel on matters such as motivations, operations, and projected social atmospherics.

Figure B-1. A typical FRAGO for describing E12 OPFOR daily exercise activities.[1]

The FRAGO includes a "Mission" section that contains execution instructions much like the execution section of a standard U.S. Army operations order. In the exemplar, the OPFOR will role-play high-value individuals, provide foot traffic for a checkpoint, conduct a mortar attack on the same checkpoint, and then provide vehicle traffic to a second checkpoint. The Mission section also states the accessibility of intelligence information return through combat questioning. Additionally, the exemplar contains specific execution instructions that limit OPFOR personnel activities, establish the social atmospheric of resistance to questioning or capture, and technical instruction about the weapons, simulated munitions, safety, and field leadership. The exemplar provides graphic views of the terrain to show specific weapon deployment detail.

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[1]Anonymous, Randomness and Integrity Services Limited. http://www.random.org/ (accessed 2010.

Appendix C. HDPT Vignette Master Person Data Listing

Table C-1 lists all 39-person data element sets used for demonstrating Heterogenous Data Proximity Tool (HDPT) capabilities during E12. These values correspond to the template data elements shown in table 2. The first 24-person data element sets represent persons whose organizational affiliations are known prior to the scenario events of E12. These groups form visual analytic clusters in HDPT useful for similarity comparisons with unaffiliated persons. The later 15-person data element sets are unaffiliated person ground truth values.

Table C-1. 39-person data element sets used in E12.

| Name	SubID	Location	Org	Age	Gen	TA	MS	Nat	POB	Equip	VehicleID	CR	Ed	Emp	MR	Rel	Sk	Add
Bahij As'ad Tawfeek		39.98 / -74.43	Friendly	28	M	Pastun	M	HN	BIA	Uniform	Burgundy Luxury Sedan	No	High	WC	SS	Mld	ME	TSV
Jalal Anas Kader		39.99 / -74.42	Friendly	59	M	Pastun	NM	HN	BIA	Cell Phone	Black SUV	No	High	WC	SS	Mld	PH	HAV
Hashim Fouad Ahmad		39.97 / -74.43	Friendly	35	M	Tajik	NM	HN	BIA	Briefcase	Burgundy Luxury Sedan	No	High	WC	SS	Mld	DR	HOV
Nazli Gauhar Ajam		40.01 / -74.56	Friendly	34	F	Pastun	M	HN	BIA	Uniform	Black SUV	No	High	WC	NS	Mld	WR	HAV
Gabr Hussein Ahmed		40.02 / -74.55	Friendly	35	M	Baloch	NM	HN	BOA	Briefcase	Black SUV	No	High	WC	SS	Mld	CO	TSV
Shakira Nashwa Abujamal		40.03 / -74.52	Friendly	37	F	Pastun	M	HN	BIA	Briefcase	Burgundy Luxury Sedan	No	High	WC	NS	Mld	PH	CCV
Rafiq Saif-al-Din Karim		40.05 / -74.46	Friendly	21	M	Pastun	NM	HN	BIA	Cell Phone	Burgundy Luxury Sedan	No	High	WC	SS	Mld	CO	TSV
Farouk Ghayth El-Ghazzawy		40.01 / -74.45	Friendly	30	M	Pastun	M	HN	BIA	Uniform	Black SUV	No	High	WC	NS	Mld	EL	VV
Karam Imen Boulos		39.98 / -74.43	Criminal	31	M	Pastun	NM	NHN	BIA	Pistol	White Panel Truck	Yes	Low	NE	NS	Mld	FI	VV
Haroun Salih Abdullah		39.99 / -74.42	Criminal	41	M	Tajik	NM	NHN	BOA	Gang Colors	Blue Motorcycle	Yes	Low	NE	NS	Mld	PH	CCV
Najwa Nadia Saqqaf		39.97 / -74.43	Criminal	40	F	Hazara	NM	NHN	BIA	Pistol	Silver Compact Car	Yes	Low	NE	NS	Mld	FI	VNV
Mostafa Tufayl Karimi		40.01 / -74.56	Criminal	30	M	Pastun	NM	NHN	BIA	Pistol	White Panel Truck	Yes	Low	NE	NS	Mld	WR	UV
Jinan Qadir El-Ghazzawy		40.02 / -74.55	Criminal	44	M	Baloch	NM	HN	BIA	Gang Colors	White Panel Truck	Yes	Low	NE	NS	Mld	ME	VV
Rana Lubna Samara		40.03 / -74.52	Criminal	43	F	Hazara	NM	NHN	BIA	Knife	Blue Motorcycle	Yes	Low	NE	NS	Mld	DR	VV
Salim Mus'ad Hakim		40.05 / -74.46	Criminal	27	M	Pastun	NM	HN	BIA	Knife	White Panel Truck	Yes	Low	NE	NS	Mld	PH	HAV
Majid Rusul Abujamal		40.01 / -74.45	Criminal	38	M	Tajik	NM	NHN	BIA	Gang Colors	Silver Compact Car	Yes	Low	NE	NS	Mld	ME	UV
Harun Ziad Boulos		39.98 / -74.43	Insurgent	41	M	Tajik	M	NHN	BOA	Cell Phone	Brown Pickup Truck	Yes	High	BC	S	Rad	FI	UV
Miraj Rashid Karimi		39.99 / -74.42	Insurgent	29	M	Tajik	M	NHN	BIA	Video Camera	Grey Sedan	Yes	High	BC	S	Rad	ME	GT
Sulaiman Badr Muhammad		39.97 / -74.43	Insurgent	44	F	Pastun	NM	HN	BOA	Video Camera	Grey Sedan	No	High	BC	NS	Rad	FI	TSV
Nasir Baki Saab		40.01 / -74.56	Insurgent	34	M	Hazara	NM	NHN	BOA	Cell Phone	Blue Minivan	No	High	BC	S	Rad	ME	GT
Ziyad Guda Sultan		40.02 / -74.55	Insurgent	34	M	Hazara	M	NHN	BOA	Bomb	Blue Minivan	Yes	High	BC	S	Rad	EL	VNV
Mostafa Farooq Darzi		40.03 / -74.52	Insurgent	54	M	Pastun	NM	HN	BOA	Video Camera	Brown Pickup Truck	Yes	High	BC	S	Rad	FI	CCV
Wafi Murtada Hakim		40.05 / -74.46	Insurgent	50	M	Baloch	M	NHN	BOA	Video Camera	Blue Minivan	Yes	High	BC	S	Rad	CO	GT
Adam Abdur-Rashid Abdullah		40.01 / -74.45	Insurgent	35	M	Baloch	M	NHN	BOA	Cell Phone	Grey Sedan	No	High	BC	S	Rad	PH	VNV
Abu Navid Sultan	S1	39.98 / -74.43	Criminal	45	M	Pastun	NM	NHN	BOA	Knife	Blue Motorcycle	Yes	Low	NE	NS	Mld	DR	TSV
Rasul Anass Zaman	S2	39.99 / -74.42	Criminal	31	M	Baloch	NM	NHN	BIA	Pistol	Silver Compact Car	Yes	Low	NE	NS	Mld	DR	HOV
Khalilah Qismat Amirmoez	S3	39.97 / -74.43	Criminal	25	F	Tajik	NM	HN	BIA	Knife	White Panel Truck	Yes	Low	NE	NS	Mld	WR	CCV
Ikram I'timad Abdullah	S4	40.01 / -74.56	Criminal	20	M	Hazara	NM	NHN	BIA	Gang Colors	Blue Motorcycle	Yes	Low	NE	NS	Mld	PH	HAV
Habib Ala Ahmed	S5	40.02 / -74.55	Criminal	23	M	Pastun	NM	NHN	BIA	Knife	White Panel Truck	Yes	Low	NE	NS	Mld	PH	HOV
Rasul Zayn Mohammed	S6	40.03 / -74.52	Friendly	55	M	Pastun	NM	HN	BIA	Uniform	Black SUV	No	High	WC	NS	Mld	FI	VV
Ridha Mahdi El-Mofty	S7	40.05 / -74.46	Friendly	30	F	Pastun	M	HN	BIA	Briefcase	Burgundy Luxury Sedan	No	High	WC	NS	Mld	ME	CCV
Sami Mis'id El-Ghazzawy	S8	40.01 / -74.45	Friendly	38	M	Pastun	MN	HN	BOA	Cell Phone	Burgundy Luxury Sedan	No	High	WC	SS	Mld	WR	HAV
Hussain Mansoor El-Hashem	S9	39.98 / -74.43	Friendly	32	M	Tajik	NM	HN	BIA	Uniform	Burgundy Luxury Sedan	No	High	WC	SS	Mld	ME	UV
Zaman Noor Hakim	S10	39.99 / -74.42	Friendly	34	M	Pastun	M	HN	BIA	Cell Phone	Black SUV	No	High	WC	SS	Mld	EL	HAV
Yusuf Mehmud Samara	S11	39.97 / -74.43	Insurgent	36	M	Hazara	M	NHN	BOA	Bomb	Brown Pickup Truck	No	High	BC	S	Rad	CO	GT
Amirah Sani El-Amin	S12	40.01 / -74.56	Insurgent	48	F	Tajik	NM	NHN	BOA	Bomb	Brown Pickup Truck	No	High	BC	NS	Rad	FI	VNV
Aali Abu Bakr Karim	S13	40.02 / -74.55	Insurgent	39	M	Baloch	NM	NHN	BIA	Cell Phone	Blue Minivan	Yes	High	BC	S	Rad	DR	GT
Saif-al-Din Jinan Hakim	S14	40.03 / -74.52	Insurgent	50	M	Tajik	M	HN	BOA	Video Camera	Blue Minivan	Yes	High	BC	NS	Rad	ME	UV
Harun Shahzad El-Mofty	S15	40.05 / -74.46	Insurgent	46	M	Pastun	M	NHN	BOA	Cell Phone	Grey Sedan	Yes	High	BC	S	Rad	PH	CCV

Support of HDPT similarity comparisons required an overall person data set design with embedded trends. In fact, the choice of data element values deliberately included both definite and randomized indicators of group affiliation. Items 1 through 4 are reference data

elements not used for similarity calculations. Items 5 and 6 are the only data elements use to initially portray unaffiliated persons on the on the HDPT visual analytic. Items 7 through 19 are used by HDPT to calculate similarity between persons and have embedded trends to support organizational affiliations. Note that all random numbers were generated using http://www.random.org.[1]

Decisions made for each person data element shown in table C-1 with values associated to organizational trends follow:

1. Name: Arabic person names were created using the Behind the Name random name generator.[2] Any resemblance to actual names is coincidental. These authentic names added realism to the HDPT vignette and provided a readily understood identification for person data element sets but were reference data elements and not used in HDPT similarity calculations.

2. SubID: Subject identifier values only appear for unaffiliated persons as a method for unique identification other than the generated name. Although not used during E12, these identifiers are less complicated to use than the generated name.

3. Location: A record of the location, in latitude and longitude, of the village associated with either sightings or the permanent address of a person. E12 organizers adopted the HDPT vignette location for general use throughout the scenario. Encounters with actors playing these individuals occurred at or near the locations listed.

4. Org: The organization element is the ground truth group affiliation for person data element sets. It determines the color of reference person nodes and the organizational membership of those nodes on the HDPT visual analytic. For example, on the HDPT visual analytic, all known criminal nodes are green. Additionally, this field indicates organizational membership ground truth for unaffiliated persons. While the ground truth is known to the HDPT vignette design team, E12 analysts had to determine organizational membership using only the data gathered from the field and the HDPT visual analytic.

5. Age: A numeric indicating a person's age in years. This number was generated and distributed randomly. For similarity purposes, age has no specific organizational trend.

6. Gen: A binary value indicating a person's gender. The population in the area being portrayed in the E12 scenario features male actors. As such, only 8 of the 39 person data element sets represent females. These are evenly distributed through the entire data set but have little influence on organizational affiliation.

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[1] Anonymous, Randomness, and Integrity Services Limited. http://www.random.org/ (accessed 2010).

[2] Behind the Name. http://www.behindthename.com (accessed 2009).

7. TA: A nominal value indicating tribal affiliation. A person data element set can have one of four tribal affiliations. An embedded trend includes most persons affiliated with the Pastun tribe as also belonging to the friendly organization. All other person data elements sets contain randomly distributed tribal affiliation. The trend was not absolute; some mixture of tribal affiliation was added to examine the affects this had on the HDPT visual analytic.

8. MS: A binary value indicating marital status. A person is either married or not married. An embedded trend includes all criminals as not married. Values for persons in the friendly and terrorist organizations were randomly determined.

9. Nat: A binary value indicating a Nationality. A person is either of the host nation or not of the host nation. An embedded trend includes all persons of the friendly organization as of the host nation, most persons of the criminal organization not of the host nation, and a random mix values for of persons of the terrorist organization.

10. POB: A binary value indicating a person's place of birth. Values for this data element can be either born in area or born outside of area. Embedded trends include most persons belonging to friendly or criminal organizations having a value of born in area and most persons belonging to the terrorist organization having a value of being born outside of the area. This reflects the current trend of terrorists originating from outside of their operational area.

11. Equip: A nominal value indicating organizational membership through a representative piece of equipment. Specified pieces of equipment became a physical props carried by E12 actors during encounters with the friendly squad. Embedded trends include the set of values indicative of organizational membership in the following specification: criminal members were associated with gang colors, knife, and pistol values; friendly members were associated with uniform and briefcase values; terrorist members were associated with video camera and bomb values. The value "cell phone" was used to indicate two organizations including friendly and terrorist.

12. VehicleID: A nominal value indicating organizational membership through a representative vehicle association. Being seen or reported using a vehicle was an indicator of organizational membership. Embedded trends include the set of values indicative of organizational membership in the following specification: criminal members were associated white panel truck, blue motorcycle, and silver compact car values; friendly members were associated with burgundy luxury sedan and black SUV values; terrorist members were associated with brown pickup truck, grey sedan, and blue minivan values.

13. CR: A binary value indicating if a person has a criminal record. Values for this data element can be either "yes" the person has a record or "no" a person does not have a record. Embedded trends include all members of the friendly organization have no

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criminal record; all members of the criminal organization have a criminal record, and members of the terrorist organization have a randomly determined occurrence of a criminal record.

14. Ed: A binary value indicating the rough level of education completed by a person. Possible values include: high is considered as high school graduate or greater while low is considered as not having graduated high school. Embedded trends include all members of the friendly and terrorist organizations have a high value and all members of the criminal organization have a low value.

15. Emp: A nominal value indicating a rough employment status for a person. For specific values, white collar (WC) is considered professional or manager; blue collar (BC) is considered laborer; and not employed (NE) is considered as not having a job. Embedded trends include all values for members of the friendly organization are WC, all values for members of terrorist organizations are BC, and all values for members of the criminal organization are NE.

16. MR: A nominal value indicating the military status of a person. For specific values, still serving (SS) is considered currently uniformed military or paramilitary service personnel; served (S) is considered retired military or paramilitary; and never served (NS) is considered as not having been a member of a military or paramilitary service. Embedded trends include all values for members of the criminal organization are NS, values for members of terrorist organizations are S and NS, and values for members of the friendly organization are a randomized mix of NS and SS.

17. Rel: A binary value indicating a person's rough degree of radicalized religious belief. For values, radical (Rad) is considered as highly radicalized belief while mild (Mld) is considered main stream religious ideals. Embedded trends include all members of the terrorist organization have a Rad value and all members of the friendly and criminal organizations have a Mld value.

18. Sk: A nominal value indicating a skill proficiency that a person possesses. Specific values include mechanical (ME), photography (PH), writing (WR), driving (DR), computer (CO), electrical (EL), and financial (FI). There are no embedded trends within skill values; all specific values were randomly assigned.

19. Add: A nominal values indicating a person's the home village address. Specific values include Time Square Village (TSV), Viet Nam Village (VNV), Vertol Village (VV), Hanover Village (HAV), Cook Corner Village (CCV), Gredge Town (GT), Utes Village (UV), and Horizon Village (HOV). There are no embedded trends within address values; all specific values were randomly assigned.

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Appendix D. Threat Role Cards

The threat role cards are a daily record of person data element values for entry into the Distributed Common Ground System-Army Global Graph to support the Heterogenous Data Proximity Tool visual analytic. The cards are both a study guide for threat actors and a means to record ground truth data element entry. A breakdown of the various card sections is presented in section 4.2.4 of this report. Presented here are 36 cards supporting an E12 maximum of four threat actors interacting with the friendly squad during field events within the nine-day exercise period.

Role Player Use ONLY

Background: Ikram is a petty thief that is employed by a local gang as a driver for various small time criminal activities. He knows about some equally small time operators.

C4ISR E12 Role Data Card 1 – AM
Tribal Affiliation: **Hazara**
Marital Status: **Married**
Nationality: **Muslma** (Muslim (Arab))
Place of Birth: **BIA** (Born in area)
Noted Equipment: **Gang Colors**
Criminal Record: **Guilty** (has one)
Religion: **MLD** (Mild)   T1

C4ISR E12 Role Data Card 1 – PM
Associated Vehicle: **Blue Motorcycle**
Employment Type: **NE** (Not Employed)
Military Record: **Never Served**
Skill: **PH** (Photography)
Address: **HAV** (Hanover Village)
Education Level: **Low**
T2

C4ISR E12 Known Data Card 1 – AM
Aali Abu Bakr Karim (S13)
Employment Type is **BC** (Blue Collar)
Skill is **DR** (Driver)
Associated Vehicle is **Blue Minivan**   T2
Abu Navid Sultan (S1)
Skill is **DR** (Driver)
Address is **TSV** (Times Square Village)
Associated Equipment is **Knife**   T2

C4ISR E12 Known Data Card 1 – PM
Aali Abu Bakr Karim (S13)
Tribal Affiliation is **Baloch**
Marital Status is **Single**
Religion is **Rad** (Radical)   T1
Abu Navid Sultan (S1)
Criminal Record is **Guilty** (Has One)
Tribal Affiliation is **Pastu**
Place of birth is **BOA** (Born Outside Area)   T1

Master Listing

Day 1 – Amirah Sani El-Amin Role Data Inject Card (S12)   CARD 2

Role Player Use ONLY

Background: Amirah El-Amin is a financial accountant with ties to the Nest-of-problems Liberation Front. She is not inherently dangerous, but has been used as both a logistics accountant and an equipment currier for a Bomb (suspected)-making operation.

C4ISR E12 Role Data Card 2 – AM

Tribal Affiliation: **Tajik**

Marital Status: **Single**

Nationality: **Muslma** (Muslim (Arab))

Place of Birth: **BOA** (Born Outside area)

Noted Equipment: **Bomb (suspected)**

Criminal Record: **None**

Religion: **MLD** (Mild)   T1

C4ISR E12 Role Data Card 2 – PM

Associated Vehicle: **Brown Pickup Truck**

Employment Type: **BC** (Blue Collar)

Military Record: **Never Served**

Skill: **FI** (Financial)

Address: **VNV** (Viet Nam Village)

Education Level: **High**

T2

C4ISR E12 Known Data Card 2 – AM

Rasul Anass Zaman (**S2**)

    Criminal record is **Guilty** (has one)
    Education Level is **Low**
    Associated Vehicle is **Silver Compact Car**   T2

Harun Shahzad El-Mofty (**S15**)

    Skill is **PH** (Photography)
    Address is **CCV** (Cook Corner Village)
    Employment Type is **BC** (Blue Collar)   T2

C4ISR E12 Known Data Card 2 – PM

Rasul Anass Zaman(**S2**)

    Tribal Affiliation is **Baloch**
    Marital Status is **Single**
    Religion is **Mild** (Mld)   T1

Harun Shahzad El-Mofty (**S15**)

    Criminal Record is **Guilty** (Has One)
    Tribal Affiliation is **Pastu**
    Place of birth is **BOA** (Born Outside Area)   T1

Master Listing

Role Player Use ONLY

Background: Sami is a technical policy writer within the government science department. He knows to fellow workers as described.

C4ISR E12 Role Data Card 3 – AM
Tribal Affiliation: **Pastu**
Marital Status: **Single**
Nationality: **Afghan**
Place of Birth: **BOA** (Born Outside area)
Noted Equipment: **Cell Phone**
Criminal Record: **None**
Religion: **MLD** (Mild) T1

C4ISR E12 Role Data Card 3 – PM
Associated Vehicle: **Burgundy Luxury Sedan**
Employment Type: **WC** (White Collar)
Military Record: **Still Serving**
Skill: **WR** (Writing)
Address: **HAV** (Hanover Village)
Education Level: **High**
T2

C4ISR E12 Known Data Card 3 – AM

Ridha Mahdi El-Mofty (**S7**)
    Criminal record is **None**
    Education Level is **High**
    Associated Vehicle is **Burgundy Luxury Sedan**   T2

Rasul Zayn Mohammed (**S6**)
    Skill is **FI** (Financial)
    Address is **VV** (Vetol Village)
    Employment Type is **WC** (White Collar)   T2

C4ISR E12 Known Data Card 3 – PM

Ridha Mahdi El-Mofty (**S7**)
    Tribal Affiliation is **Pastu**
    Criminal Record is **None**
    Religion is **Mld** (Mild)   T1

Rasul Zayn Mohammed (**S6**)
    Tribal Affiliation is **Pastu**
    Marital Status is **Single**
    Place of birth is **BIA** (Born In Area)   T1

Master Listing

Day 1 – Ridha Mahdi El-Mofty Role Data Inject Card (S7)

CARD 4

Role Player Use ONLY

Background: Ridha is considered an up and coming engineer with ideas on infrastructure improvements. Ridha works in the Public Works department of the new Afghani government.

C4ISR E12 Role Data Card 4 – AM

Tribal Affiliation: **Pastu**

Marital Status: **Married**

Nationality: **Afghan**

Place of Birth: **BIA** (Born in area)

Noted Equipment: **Briefcase**

Criminal Record: **None**

Religion: **MLD** (Mild)

T1

C4ISR E12 Role Data Card 4 – PM

Associated Vehicle: **Burgundy Luxury Sedan**

Employment Type: **WC** (White Collar)

Military Record: **Never Served**

Skill: **ME** (Mechanical Engineer)

Address: **CCV** (Cook Corner Village)

Education Level: **High**

T2

C4ISR E12 Known Data Card 4 – AM

Saif-al-Din Jinan Hakim (**S14**)

    Skill is **ME** (Mechanical Engineering)
    Address is **UV** (Utes Village)
    Employment Type is **BC** (Blue Collar)

T2

Zaman Noor Hakim (**S10**)

    Criminal record is **None**
    Education Level is **High**
    Associated Vehicle is **Black SUV**

T2

C4ISR E12 Known Data Card 4 – PM

Saif-al-Din Jinan Hakim (**S14**)

    Tribal Affiliation is **Tajik**
    Marital Status is **Married**
    Religion is **Mld** (Mild)

T1

Zaman Noor Hakim (**S10**)

    Military Record is **Never Served**
    Tribal Affiliation is **Pastu**
    Place of birth is **BIA** (Born In Area)

T1

Master Listing

Day 2 – Aali Abu Bakr Karim Role Data Inject Card (S13) CARD 5

Role Player Use ONLY

Background: Aali is a driver for one of the bosses of We Want to be Different (WWD) insurgent organization. He was recruited from the criminal underworld and as such knows about a couple of other criminal drivers.

C4ISR E12 Role Data Card 5 – AM

Tribal Affiliation: **Baloch**

Marital Status: **Single**

Nationality: **Muslma** (Muslim (Arab))

Place of Birth: **BIA** (Born inside area)

Noted Equipment: **Cell Phone**

Criminal Record: **Guilty** (Has One)

Religion: **RAD** (Radical)

T1

C4ISR E12 Role Data Card 5 – PM

Associated Vehicle: **Blue Minivan**

Employment Type: **BC** (Blue Collar)

Military Record: **Served**

Skill: **DR** (Driver)

Address: **GT** (Viet Nam Village)

Education Level: **High**

T2

C4ISR E12 Known Data Card 5 – AM

Abu Navid Sultan (**S1**)
   Address is **TSV** (Time Square Village)
   Military Record is **Never Served**
   Education Level is **Low**   T2

Rasul Anass Zaman (**S2**)
   Address is **HOV** (Horizon Village)
   Military Record is **Never Served**
   Education Level is **Low**   T2

R opp K

C4ISR E12 Known Data Card 5 – PM

Abu Navid Sultan (**S1**)
   Tribal Affiliation is **Baloch**
   Marital Status is **Single**
   Religion is **Mild** (Mld)   T1

Rasul Anass Zaman (**S2**)
   Religion is **MLD (Mild)**
   Marital Status is **Single**
   Nationality is **Muslma** (Muslim (Arab))   T1

Master Listing

Day 2 – Habib Ala Ahmed Role Data Inject Card (S5)

CARD 6

Role Player Use ONLY

Background: Habib uses his skills as a freelance photographer to addend gatherings and functions with the alternative motive of casing the facilities for later criminal activity. As such, he has met several technical people including those with leanings both to and against terrorist groups. Still, he is motivated by easy break-ins with sloppy security.

C4ISR E12 Role Data Card 6 – AM

Tribal Affiliation: **Pastu**

Marital Status: **Single**

Nationality: **Muslma** (Muslim (Arab))

Place of Birth: **BIA** (Born in area)

Noted Equipment: **Knife**

Criminal Record: **Guilty** (has One)

Religion: **MLD** (Mild)

T1

C4ISR E12 Role Data Card 6 – PM

Associated Vehicle: **White Panel Van**

Employment Type: **NE** (Not Employed)

Military Record: **Never Served**

Skill: **PH** (Photographer)

Address: **HOV** (Horizon Village)

Education Level: **Low**

T2

C4ISR E12 Known Data Card 6 – AM

Ridha Mahdi El-Mofty (**S7**)

    Address is **CCV** (Cook Corner Village)
    Education Level is **High**
    Associated Vehicle is **Burgundy Luxury Sedan**

T2

Yusuf Mehmud Samara (**S11**)

    Skill is **CO** (Computers)
    Address is **GT** (Gredge Town)
    Employment Type is **BC** (Blue Collar)

T2

R opp K

C4ISR E12 Known Data Card 6 – PM

Ridha Mahdi El-Mofty (**S7**)

    Tribal Affiliation is **Pastu**
    Marital Status is **Married**
    Religion is **Mld** (Mild)

T1

Yusuf Mehmud Samara (**S11**)

    Criminal Record is **None**
    Tribal Affiliation is **Hazara**
    Place of birth is **BOA** (Outside Area)

T1

Master Listing

Role Player Use ONLY

Background: Saif is a father who has lost sons to the activities of the NFL. He has amassed data on insurgent members of this organization and is ready to spill the beans. Ironically, he is also become a member of the rival insurgent organization in the area.

C4ISR E12 Role Data Card 7 – AM
Tribal Affiliation: **Tajik**
Marital Status: **Married**
Nationality: **Afghan**
Place of Birth: **BOA** (Born Outside of area)
Noted Equipment: **Video Camera**
Criminal Record: **Guilty** (has One)
Religion: **Rad** (Radical)   T1

C4ISR E12 Role Data Card 7 – PM
Associated Vehicle: **Blue Minivan**
Employment Type: **BC** (Blue Collar)
Military Record: **Never Served**
Skill: **FI** (Financial)
Address: **UV** (Utes Village)
Education Level: **High**
T2

C4ISR E12 Known Data Card 7 – AM

Amirah Sani El-Amin (**S12**)
> Address is **VNV** (Viet Nam Village)
> Education Level is **High**
> Associated Vehicle is **Brown Pickup truck**   T2

Harun Shahzad El-Mofty (**S15**)
> Skill is **PH** (Photography)
> Address is **CCV** (Cook Corner Village)
> Employment Type is **BC** (Blue Collar)   T2

R opp K

C4ISR E12 Known Data Card 7 – PM

Amirah Sani El-Amin (**S12**)
> Tribal Affiliation is **Tajik**
> Nationality is **Muslma** (Muslim (Arab))
> Place of Birth is **BOA** (Born outside of area)   T1

Harun Shahzad El-Mofty (**S15**)
> Criminal Record is **Guilty** (Has One)
> Tribal affiliation is **Pastu**
> Place of birth is **BOA** (Outside Area)   T1

Master Listing

CARD 8

Role Player Use ONLY

Background: Husain is an avid reader of insurgent literature for his intelligence-related military job. He knows of Amirmoez by his writing and research. He also know El-Ghazzwy from his car pool for work.

C4ISR E12 Role Data Card 8 – AM

Tribal Affiliation: **Tajik**

Marital Status: **Single**

Nationality: **Afghan**

Place of Birth: **BIA** (Born in area)

Noted Equipment: **Uniform**

Criminal Record: **None**

Religion: **MLD** (Mild)

T1

C4ISR E12 Role Data Card 8 – PM

Associated Vehicle: **Burgundy Luxury Sedan**

Employment Type: **WC** (Blue Collar)

Military Record: **Still Serving**

Skill: **ME** (Mechanical)

Address: **UV** (Utes Village)

Education Level: **High**

T2

C4ISR E12 Known Data Card 8 – AM

Sami Mis'id El-Ghazzawy (**S8**)

> Military record is **Still Serving**
> Education Level is **High**
> Associated Vehicle is B**urgundy Luxury Sedan**   T2

Khaliah Qismat Amirmoez (**S3**)

> Skill is **WR** (Writing)
> Address is **CCV** (Cook Corner Village)
> Employment Type is **NE** (Not Employed)   T2

R opp K

C4ISR E12 Known Data Card 8 – PM

Sami Mis'id El-Ghazzawy (**S8**)

> Tribal Affiliation is **Pastu**
> Marital Status is **Single**
> Religion is **Mild** (Mld)   T1

Khaliah Qismat Amirmoez (**S3**)

> Criminal Record is **Guilty** (Has One)
> Tribal Affiliation is **Tajik**
> Place of birth is **BIA** (Born inside Area)   T1

Master Listing

Day 3 – Amirah Sani El-Amin Role Data Inject Card (S12)

CARD 9

Background: Amirah El-Amin is a cab driver who works for the We Want to be Different (WWD) insurgent group. He has been amassing data on two of his more regular fares.

C4ISR E12 Role Data Card 9 – AM

Tribal Affiliation: **Baloch**

Marital Status: **Single**

Nationality: **Muslma** (Muslim (Arab))

Place of Birth: **BIA** (Born in area)

Noted Equipment: **Cell Phone**

Criminal Record: **Guilty** (Has one)

Religion: **MLD** (Mild)

T1

C4ISR E12 Role Data Card 9 – PM

Associated Vehicle: **Blue Minivan**

Employment Type: **BC** (Blue Collar)

Military Record: **Served**

Skill: **DR** (Driver)

Address: **GT** (Gredge Town)

Education Level: **High**

T2

C4ISR E12 Known Data Card 9 – AM

Ridha Mahdi El-Mofty (**S7**)
　　　Tribal Affiliation is **Hazara**
　　　Marital Status is **Single**
　　　Religion is **Mld** (Mild)

T1

Rasul Anass Zaman (**S2**)
　　　Associated Equipment is **Briefcase**
　　　Tribal Affiliation is **Pastu**
　　　Place of birth is **BIA** (Born Inside Area)

T1

C4ISR E12 Known Data Card 9 – PM

Ridha Mahdi El-Mofty (**S7**)
　　　Mnilitary Record is **Never Served**
　　　Education Level is **Low**
　　　Associated Vehicle is **Blue Motorcycle**

T2

Rasul Anass Zaman (**S2**)
　　　Skill is **ME** (Mechanical)
　　　Address is **CCV** (Cook Corner Village)
　　　Employment Type is **WC** (White Collar)

T2

Master Listing + 1

Role Player Use ONLY
Background: Sani is an operative of the Nest-of-problems Liberation Front and has used his position as a freelance photographers to spy on the corrupt activities of two brothers.

C4ISR E12 Role Data Card 10 – AM
Tribal Affiliation: **Pastu**
Marital Status: **Married**
Nationality: **Muslma** (Muslim (Arab))
Place of Birth: **BOA** (Born outside of area)
Noted Equipment: **Cell Phone**
Criminal Record: **Guilty** (Has one)
Religion: **Rad** (Radical)

T1

C4ISR E12 Role Data Card 10 – PM
Associated Vehicle: **Grey Sedan**
Employment Type: **BC** (Blue Collar)
Military Record: **Served**
Skill: **PH** (Photographer)
Address: **CCV** (Cook Corner Village)
Education Level: **High**

T2

C4ISR E12 Known Data Card 10 – AM
Zaman Noor Hakim (**S10**)
Tribal Affiliation is **Tajik**
Marital Status is **Single**
Religion is **Mld** (Mild)   T1
Saif-al-Din Jinan Hakim (**S14**)
Associated Equipment is **Pistol**
Tribal Affiliation is **Baloch**
Place of birth is **BIA** (Born Inside Area)   T1

C4ISR E12 Known Data Card 10 – PM
Zaman Noor Hakim (**S10**)
Military Record is **Still Serving**
Education Level is **High**
Associated Vehicle is **Burgundy Luxury Sedan**   T2
Saif-al-Din Jinan Hakim (**S14**)
Skill is **DR** (Driver)
Address is **HOV** (Horizon Village)
Employment Type is **NE** (Not Employed)   T2

Master Listing + 1

CARD 11

Role Player Use ONLY

Background: Harun is with a criminal organization that has dealings with insurgent organizations. Sometimes, he has transported equipment and other materials for them.

C4ISR E12 Role Data Card 11 – AM

Tribal Affiliation: **Pastu**

Marital Status: **Single**

Nationality: **Muslma** (Muslim (Arab))

Place of Birth: **BOA** (Born Outside Area)

Noted Equipment: **Knife**

Criminal Record: **Guilty** (Has one)

Religion: **MLD** (Mild)

T1

C4ISR E12 Role Data Card 11 – PM

Associated Vehicle: **Blue Motorcycle**

Employment Type: **NE** (Not Employed)

Military Record: **Never Served**

Skill: **DR** (Driver)

Address: **TSV** (Times Square Village)

Education Level: **Low**

T2

C4ISR E12 Known Data Card 11 – AM

Abu Navid Sultan (**S1**)

> Tribal Affiliation is **Pastu**
> Marital Status is **Single**
> Nationality is **Muslma** (Muslim (Arab))

T1

Aali Abu Bakr Karim (**S13**)

> Associated Equipment is **Bomb** (suspected)
> Tribal Affiliation is **Hazara**
> Place of birth is **BOA** (Born Outside Area)

T1

C4ISR E12 Known Data Card 11 – PM

Abu Navid Sultan (**S1**)

> Military Record is **Never Served**
> Education Level is **Low**
> Associated Vehicle is **White Panel Truck**

T2

Aali Abu Bakr Karim (**S13**)

> Skill is **CO** (Computers)
> Address is **GT** (Gredge Town)
> Employment Type is **BC** (Blue Collar)

T2

Master Listing + 1

Role Player Use ONLY

Background: Yusuf has been involved with the insurgent movement for some time. Along the way, he has encountered elements of both criminal organizations and the government.

C4ISR E12 Role Data Card 12 – AM
Associated Vehicle: **Brown Pickup Truck**
Employment Type: **BC** (Blue Collar)
Military Record: **Never Served**
Skill: **FI** (Financial)
Address: **VNV** (Vietnam Village)
Education Level: **High**
Religion: **MLD** (Mild)

C4ISR E12 Role Data Card 12 – PM
Tribal Affiliation: **Tajik**
Marital Status: **Single**
Nationality: **Muslma** (Muslim (Arab))
Place of Birth: **BOA** (Born outside area)
Noted Equipment: **Bomb (Suspected)**
Criminal Record: **None**

C4ISR E12 Known Data Card 12 – AM
Hussain Mansoor El-Hashem (**S9**)
Tribal Affiliation is **Tajik**
Marital Status is **Single**
Nationality is **Afghan**
Khalilah Qismat Amirmoez (**S3**)
Associated Equipment is **Uniform**
Tribal Affiliation is **Pastu**
Place of birth is **BIA** (Born in Area)

| C4ISR E12 Known Data Card 12 – PM |
| --- |
| Hussain Mansoor El-Hashem (**S9**) |
| Military Record is **Never Served** |
| Education Level is **Low** |
| Associated Vehicle is **White Panel Truck** |
| Khalilah Qismat Amirmoez (**S3**) |
| Skill is **FI** (Financial) |
| Address is **VV** (Vetol Village) |
| Employment Type is **WC** (White Collar) |

Master Listing + 1

Role Player Use ONLY

Background: Harun is with a criminal organization that has dealings with insurgent organizations. Sometimes, he has transported equipment and other materials for them.

C4ISR E12 Role Data Card 13 – AM
Tribal Affiliation: **Pastu**
Marital Status: **Single**
Nationality: **Muslma** (Muslim (Arab))
Place of Birth: **BOA** (Born Outside Area)
Noted Equipment: **Knife**
Criminal Record: **Guilty** (Has one)
Religion: **MLD** (Mild) T1

C4ISR E12 Role Data Card 13 – PM
Associated Vehicle: **Blue Motorcycle**
Employment Type: **NE** (Not Employed)
Military Record: **Never Served**
Skill: **DR** (Driver)
Address: **TSV** (Times Square Village)
Education Level: **Low**
T2

C4ISR E12 Known Data Card 13 – AM
Abu Navid Sultan (**S1**)
Tribal Affiliation is **Pastu**
Marital Status is **Single**
Nationality is **Muslma** (Muslim (Arab)) T1
Sami Mis'id El-Ghazzawy (**S8**)
Associated Equipment is **Cell Phone**
Tribal Affiliation is **Pastu**
Place of birth is **BOA** (Born Outside Area) T1

C4ISR E12 Known Data Card 13 – PM
Abu Navid Sultan (**S1**)
Military Record is **Never Served**
Education Level is **Low**
Associated Vehicle is **White Panel Truck** T2
ami Mis'id El-Ghazzawy (**S8**)
Skill is **PH** (Photographer)
Address is **CCV** (Cook Corner Village)
Employment Type is **BC** (Blue Collar) T2

Master Listing + 1

Role Player Use ONLY

Background: Saif is a hardcore driver for top bosses in the We Want to be Different (WWD) insurgent group. In his position, he is sometimes asked to pick up criminal figures for clandestine meetings.

C4ISR E12 Role Data Card 14 – AM
Tribal Affiliation: **Baloch**
Marital Status: **Single**
Nationality: **Muslma** (Muslim (Arab))
Place of Birth: **BIA** (Born in area)
Noted Equipment: **Pistol**
Criminal Record: **Guilty** (Has one)
Religion: **MLD** (Mild)   T1

C4ISR E12 Role Data Card 14 – PM
Associated Vehicle: **Silver Compact Car**
Employment Type: **NE** (Not Employed)
Military Record: **Never Served**
Skill: **DR** (Driver)
Address: **HOV** (Horizon Village)
Education Level: **Low**
T2

C4ISR E12 Known Data Card 14 – AM
Aali Abu Bakr Karim (**S13**)
Tribal Affiliation is **Hazara**
Marital Status is **Married**
Religion is **Rad** (Radical)   T1
Rasul Anass Zaman (**S2**)
Associated Equipment is **Briefcase**
Tribal Affiliation is **Pastu**
Place of birth is **BIA** (Born Inside Area)   T1

C4ISR E12 Known Data Card 14 – PM
Aali Abu Bakr Karim (**S13**)
Military Record is **Served**
Education Level is **High**
Associated Vehicle is **Brown Pickup Truck**   T2
Rasul Anass Zaman (**S2**)
Skill is **ME** (Mechanical)
Address is **CCV** (Cook Corner Village)
Employment Type is **WC** (White Collar)   T2

Master Listing + 1

Day 4 – Zaman Noor Hakim Role Data Inject Card (S10)

CARD 15

Role Player Use ONLY

Background: Zaman is an naïve engineer being pumped for information from various criminal operatives concerning the value of machines and other equipment he uses in his work; particularly if he work much from his house.

C4ISR E12 Role Data Card 15 – AM
Tribal Affiliation: **Tajik**
Marital Status: **Single**
Nationality: **Afghan**
Place of Birth: **BIA** (Born in area)
Noted Equipment: **Uniform**
Criminal Record: **None**
Religion: **MLD** (Mild)   T1

C4ISR E12 Role Data Card 15 – PM
Associated Vehicle: **Burgundy Luxury Sedan**
Employment Type: **WC** (White Collar)
Military Record: **Still Serving**
Skill: **ME** (Mechanical)
Address: **UT** (Utes Village)
Education Level: **High**
T2

C4ISR E12 Known Data Card 15 – AM
Khalilah Qismat Amirmoez (**S3**)
Tribal Affiliation is **Pastu**
Marital Status is **Single**
Religion is **Mld** (Mild)   T1
Ridha Mahdi El-Mofty (**S7**)
Associated Equipment is **Gang Colors**
Tribal Affiliation is **Hazara**
Place of birth is **BIA** (Born Inside Area)   T1

C4ISR E12 Known Data Card 15 – PM
Khalilah Qismat Amirmoez (**S3**)
Military Record is **Never Served**
Education Level is **High**
Associated Vehicle is **Black SUV**   T2
Ridha Mahdi El-Mofty (**S7**)
Skill is **PH** (Photographer)
Address is **HAV** (Hanover Village)
Employment Type is **NE** (Not Employed)   T2

Master Listing + 1

CARD 16

Role Player Use ONLY

Background: Habib is a government undercover agent working to break the infamous Minivan Pool Ring (MPR) – so called because of their transportation mode (a blue dodge caravan). The MPR is a part of the We Want to be Different (WWD) insurgent group and is suspected of being responsible for several government assassination s.

C4ISR E12 Role Data Card 16 – AM

Tribal Affiliation: **Pastu**

Marital Status: **Single**

Nationality: **Afghan**

Place of Birth: **BOA** (Born Outside area)

Noted Equipment: **Cell Phone**

Criminal Record: **None**

Religion: **MLD** (Mild)

T1

C4ISR E12 Role Data Card 16 – PM

Associated Vehicle: **Burgundy Luxury Sedan**

Employment Type: **WC** (Blue Collar)

Military Record: **Still Serving**

Skill: **WR** (Writer)

Address: **HAV** (Hanover Village)

Education Level: **High**

T2

C4ISR E12 Known Data Card 16 – AM

Amirah Sani El-Amin (**S12**)
> Tribal Affiliation is **Baloch**
> Marital Status is **Single**
> Religion is **Rad** (Radical)

T1

Ikram I'timad Abdullah (**S4**)
> Associated Equipment is **Video Camera**
> Tribal Affiliation is **Tajik**
> Place of birth is **BIA** (Born Inside Area)

T1

C4ISR E12 Known Data Card 16 – PM

Amirah Sani El-Amin (**S12**
> Military Record is **Served**
> Education Level is **High**
> Associated Vehicle is **Blue Minivan**

T2

Ikram I'timad Abdullah (**S4**)
> Skill is **ME** (Mechanical)
> Address is **UT** (Utes Village)
> Employment Type is **BC** (White Collar)

T2

Master Listing + 1

Role Player Use ONLY

Background: As a hopeful to joint the Bad Guys Inc (BGI) criminal operation, Saif was given the job of photographing possible robbery sites. He developed a relationship with a couple of the local alone the way.

C4ISR E12 Role Data Card 17 – AM
Tribal Affiliation: **Pastu**
Marital Status: **Single**
Nationality: **Muslma** (Muslim (Arab))
Place of Birth: **BIA** (Born in area)
Noted Equipment: **Knife**
Criminal Record: **Guilty** (Has One)
Religion: **MLD** (Mild)   T1

C4ISR E12 Role Data Card 17 – PM
Associated Vehicle: **White Panel Truck**
Employment Type: **NE** (Not Employed)
Military Record: **Never Served**
Skill: **PH** (Photographer)
Address: **HOV** (Horizon Village)
Education Level: **Low**
T2

C4ISR E12 Known Data Card 17 – AM
Abu Navid Sultan (**S1**)
Military Record is **Never Served**
Education Level is **Low**
Associated Vehicle is **Silver Compact Car**   T2
Khalilah Qismat Amirmoez (**S3**)
Criminal Record is **None**
Tribal Affiliation is **Pastu**
Place of birth is **BIA** (Born Inside Area)   T1

C4ISR E12 Known Data Card 17 – PM
Abu Navid Sultan (**S1**)
Tribal Affiliation is **Baloch**
Marital Status is **Single**
Religion is **Mld** (Mild)   T1
Khalilah Qismat Amirmoez (**S3**)
Skill is **ME** (Mechanical)
Address is **CCV** (Cook Corner Village)
Employment Type is **WC** (Blue Collar)   T2

Master Listing + 2

Role Player Use ONLY
Background: Sami is an insurgent informant. He cases possible attack areas and people that might be good for kidnapping. He is currently working to determine if Rasul Zaman is worth the effort of an attack.

C4ISR E12 Role Data Card 18 – AM
Tribal Affiliation: **Pastu**
Marital Status: **Married**
Nationality: **Muslma** (Muslim (Arab))
Place of Birth: **BOA** (Born Outside of area)
Noted Equipment: **Cell Phone**
Criminal Record: **Guilty** (Has One)
Religion: **Rad** (Radical)   T1

C4ISR E12 Role Data Card 18 – PM
Associated Vehicle: **Grey Sedan**
Employment Type: **BC** (Blue Collar)
Military Record: **Served**
Skill: **PH** (Photographer)
Address: **CCV** (Cook Corner Village)
Education Level: **High**
T2

C4ISR E12 Known Data Card 18 – AM
Hussain Mansoor El-Hashem (**S9**)
Military Record is **Never Served**
Tribal Affiliation is **Pastu**
Place of birth is **BOA** (Born Outside of Area)   T2
Rasul Anass Zaman (**S2**)
Nationality is **Afghan**
Education Level is **High**
Associated Vehicle is **Black SUV**   T1

C4ISR E12 Known Data Card 18 – PM
Hussain Mansoor El-Hashem (**S9**)
Skill is **DR** (Driver)
Address is **TSV** (Times Square Village)
Employment Type is **NE** (Not Employed)   T1
Rasul Anass Zaman (**S2**)
Tribal Affiliation is **Pastu**
Marital Status is **Single**
Religion is **Mld** (Mild)   T2

Master Listing + 2

Day 5 – Aali Abu Bakr Karim Role Data Inject Card (S13)

CARD 19

Role Player Use ONLY

Background: Aali is a mechanic that formally worked in a local garage. He has met several interesting drivers who brought their vehicles to him for maintenance.

C4ISR E12 Role Data Card 19 – AM
Tribal Affiliation: **Tajik**
Marital Status: **Single**
Nationality: **Afghan**
Place of Birth: **BIA** (Born in area)
Noted Equipment: **Uniform**
Criminal Record: **None**
Religion: **MLD** (Mild)

T1

C4ISR E12 Role Data Card 19 – PM
Associated Vehicle: **Burgundy Luxury Sedan**
Employment Type: **WC** (White Collar)
Military Record: **Still Serving**
Skill: **ME** (Mechanical)
Address: **UT** (Utes Village)
Education Level: **High**

T2

C4ISR E12 Known Data Card 19 – AM

Yusuf Mehmud Samara (**S11**)

    Military Record is **Never Served**
    Education Level is **Low**
    Associated Vehicle is **White Panel Truck**

T2

Ikram I'timad Abdulah (**S4**)

    Criminal Record is **Guilty** (Has One)
    Tribal Affiliation is **Baloch**
    Place of birth is **BIA** (Born Inside Area)

T1

C4ISR E12 Known Data Card 19 – PM

Yusuf Mehmud Samara (**S11**)

    Tribal Affiliation is **Tajik**
    Marital Status is **Single**
    Religion is **Mld** (Mild)

T1

Ikram I'timad Abdulah (**S4**)

    Skill is **DR** (Driver)
    Address is **GT** (Gredge Town)
    Associated Vehicle is **Blue Minivan**

T2

Master Listing + 2

CARD 20

Role Player Use ONLY
Background: Ridha has recently completed a report detailing the interactions between a government investigator and a possible insurgent. Unfortunately, the result were not conclusive.

C4ISR E12 Role Data Card 20 – AM

Tribal Affiliation: **Pastu**

Marital Status: **Single**

Nationality: **Afghan**

Place of Birth: **BOA** (Born Outside area)

Noted Equipment: **Cell Phone**

Criminal Record: **None**

Religion: **MLD** (Mild)

T1

C4ISR E12 Role Data Card 20 – PM

Associated Vehicle: **Burgundy Luxury Sedan**

Employment Type: **WC** (Blue Collar)

Military Record: **Still Serving**

Skill: **WR** (Writer)

Address: **HAV** (Hanover Village)

Education Level: **High**

T2

C4ISR E12 Known Data Card 20 – AM

Zaman Noor Hakim (**S10**)
Military Record is **Still Serving**
Education Level is **High**
Associated Vehicle is **Black SUV**
T2

Habib Ala Ahmed (**S5**)
Criminal Record is **Guilty** (Has One)
Tribal Affiliation is **Tajik**
Place of birth is **BOA** (Born Outside Area)
T1

C4ISR E12 Known Data Card 20 – PM

Zaman Noor Hakim (**S10**)
Tribal Affiliation is **Pastu**
Marital Status is **Married**
Religion is **Mld** (Mild)
T1

Habib Ala Ahmed (**S5**)
Skill is **ME** (Mechanical)
Address is **UV** (Utes Village)
Employment Type is **BC** (Blue Collar)
T2

Master Listing + 2

Role Player Use ONLY

Background: Saif is a criminal videographer that cases places for robbery attempts. He works with the two others shown most of the time.

C4ISR E12 Role Data Card 21 – AM
Tribal Affiliation: **Pastu**
Marital Status: **Single**
Nationality: **Muslma** (Muslim (Arab))
Place of Birth: **BIA** (Born in area)
Noted Equipment: **Knife**
Criminal Record: **Guilty** (Has One)
Religion: **MLD** (Mild)   T1

C4ISR E12 Role Data Card 21 – PM
Associated Vehicle: **White Panel Truck**
Employment Type: **NE** (Not Employed)
Military Record: **Never Served**
Skill: **PH** (Photographer)
Address: **HOV** (Horizon Village)
Education Level: **Low**
  T2

C4ISR E12 Known Data Card 21 – AM
Amirah Sani El-Amin (**S12**)
Military Record is **Never Served**
Education Level is **Low**
Associated Vehicle is **Blue Motorcycle**   T2
Hussain Mansoor El-Hashem (**S9**)
Criminal Record is **Guilty** (Has One)
Tribal Affiliation is **Pastu**
Place of birth is **BOA** (Born Outside Area)   T1

C4ISR E12 Known Data Card 21 – PM
Amirah Sani El-Amin (**S12**)
Tribal Affiliation is **Hazara**
Marital Status is **Single**
Religion is **Mld** (Mild)   T1
Hussain Mansoor El-Hashem (**S9**)
Skill is **DR** (Driver)
Address is **TSV** (Times Square Village)
Employment Type is **NE** (Not Employed)   T2

Master Listing + 2

CARD 22

Role Player Use ONLY
Background: Abu is a driver working for the government and as such he has met several other government people.

C4ISR E12 Role Data Card 22 – AM
Tribal Affiliation: **Baloch**
Marital Status: **Single**
Nationality: **Muslma** (Muslim (Arab))
Place of Birth: **BIA** (Born in area)
Noted Equipment: **Pistol**
Criminal Record: **Guilty** (Has one)
Religion: **MLD** (Mild) T1

C4ISR E12 Role Data Card 22 – PM
Associated Vehicle: **Silver Compact Car**
Employment Type: **NE** (Not Employed)
Military Record: **Never Served**
Skill: **DR** (Driver)
Address: **HOV** (Horizon Village)
Education Level: **Low**
T2

C4ISR E12 Known Data Card 22 – AM
Rasul Anass Zaman (**S2**)
Military record is **Never Served**
Education Level is **High**
Associated Vehicle is **Black SUV** T2
Aali Abu Bakr Karim (**S13**)
Criminal Record is **None**
Tribal Affiliation is **Tajik**
Place of birth is **BIA** (Born Inside Area) T1

C4ISR E12 Known Data Card 22 – PM
Rasul Anass Zaman (**S2**)
Tribal Affiliation is **Pastu**
Marital Status is **Single**
Religion is **Mld** (Mild) T1
Aali Abu Bakr Karim (**S13**)
Skill is **ME** (Mechanical)
Address is **UV** (Utes Village)
Employment Type is **WC** (White Collar) T2

<div align="right">Master Listing + 2</div>

CARD 23

Role Player Use ONLY

Background: Zaman has been working for the government to follow the exploits of the Tajik tribe within the area. He has amassed some knowledge about key personnel within this tribe.

C4ISR E12 Role Data Card 23 – AM

Tribal Affiliation: **Pastu**

Marital Status: **Married**

Nationality: **Afghan**

Place of Birth: **BIA** (Born in area)

Noted Equipment: **Cell Phone**

Criminal Record: **None**

Religion: **MLD** (Mild)

T1

C4ISR E12 Role Data Card 23 – PM

Associated Vehicle: **Black SUV**

Employment Type: **WC** (White Collar)

Military Record: **Still Serving**

Skill: **EL** (Electrical)

Address: **HAV** (Hanover Village)

Education Level: **Low**

T2

C4ISR E12 Known Data Card 23 – AM

Habib Ala Ahmed (**S5**)

Military Record is **Never Served**
Education Level is **High**
Associated Vehicle is **Blue Minivan**

T2

Harun Shahzad El-Mofty (**S15**)

Criminal Record is **None**
Tribal Affiliation is **Tajik**
Place of birth is **BOA** (Born outside Area)

T1

C4ISR E12 Known Data Card 23 – PM

Habib Ala Ahmed (**S5**)

Tribal Affiliation is **Tajik**
Marital Status is **Married**
Religion is **Rad** (Radical)

T1

Harun Shahzad El-Mofty (**S15**)

Skill is **FI** (Financial)
Address is **VNV** (Vietnam Village)
Employment Type is **BC** (Blue Collar)

T2

Master Listing + 2

Role Player Use ONLY

Background: Amirah is a free lance photographer with criminal ties who plays on both government and insurgent sides. From time to time, he sells pictures of interesting people to his contacts within both the government and insurgent organizations.

C4ISR E12 Role Data Card 24 – AM
Tribal Affiliation: **Hazara**
Marital Status: **Single**
Nationality: **Muslma** (Muslim (Arab))
Place of Birth: **BIA** (Born in area)
Noted Equipment: **Gang Colors**
Criminal Record: **Guilty** (Has One)
Religion: **MLD** (Mild)   T1

C4ISR E12 Role Data Card 24 – PM
Associated Vehicle: **Blue Motorcycle**
Employment Type: **NE** (Not Employed)
Military Record: **Never Served**
Skill: **PH** (Photographer)
Address: **HAV** (Hanover Village)
Education Level: **Low**
T2

C4ISR E12 Known Data Card 24 – AM
Ridha Mahdi El-Mofty (**S7**)
Military Record is **Still Serving**
Education Level is **High**
Associated Vehicle is **Burgundy Luxury Sedan** T2
Rasul Zayn Mohammed (**S6**)
Criminal Record is **None**
Tribal Affiliation is **Hazara**
Place of birth is **BOA** (Born Outside Area) T1

C4ISR E12 Known Data Card 24 – PM
Ridha Mahdi El-Mofty (**S7**)
Tribal Affiliation is **Pastu**
Marital Status is **Single**
Religion is **Mld** (Mild) T1
Rasul Zayn Mohammed (**S6**)
Skill is **CO** (Computers)
Address is **GT** (Gredge Town)
Employment Type is **BC** (Blue Collar) T2

Master Listing + 2

Day 7 – Ridha Mahdi El-Mofty Role Data Inject Card (S7)   CARD 25

Role Player Use ONLY

Background: Ridha is a video expert working as a mercenary for various criminal and insurgent outfits. While he has worked for insurgent elements, he has not participated in any insurgent activities.

C4ISR E12 Role Data Card 25 – AM

Associated Vehicle: **White Panel Truck**

Employment Type: **NE** (Not Employed)

Military Record: **Never Served**

Skill: **PH** (Photographer)

Address: **HOV** (Horizon Village)

Education Level: **Low**

T2

C4ISR E12 Role Data Card 25 – PM

Tribal Affiliation: **Pastu**

Marital Status: **Single**

Nationality: **Muslma** (Muslim (Arab))

Place of Birth: **BIA** (Born in area)

Noted Equipment: **Knife**

Criminal Record: **Guilty** (Has One)

Religion: **MLD** (Mild)

T1

C4ISR E12 Known Data Card 25 – AM

Sami Mis'id El-Ghazzawy (**S8**)

Military record is **Served**
Education Level is **High**
Associated Vehicle is **Grey Sedan**

T2

Ikram I'timad Abdullah (**S4**)

Skill is **DR** (Driver)
Address is **TSV** (Times Square Village)
Employment Type is **NE** (Not Employed)

T2

C4ISR E12 Known Data Card 25 – PM

Sami Mis'id El-Ghazzawy (**S8**)

Tribal Affiliation is **Pastu**
Marital Status is **Married**
Noted Equipment is **Cell Phone**

T1

Ikram I'timad Abdullah (**S4**)

Criminal Record is **Guilty** (Has One)
Tribal Affiliation is **Pastu**
Place of birth is **BOA** (Born Outside Area)

T1

Master Listing + 3

CARD 26

Role Player Use ONLY

Background: Rasul is a petty thief that has often been picked-up by two local government officials – for both questioning and suspicion of small time crimes. His relationship with the officials has given him some of their personal information .

C4ISR E12 Role Data Card 26 – AM
Associated Vehicle: **White Panel Truck**
Employment Type: **NE** (Not Employed)
Military Record: **Never Served**
Skill: **DR** (Driver)
Address: **HOV** (Horizon Village)
Education Level: **Low**
T2

C4ISR E12 Role Data Card 26 – PM
Tribal Affiliation: **Beloch**
Marital Status: **Single**
Nationality: **Muslma** (Muslim (Arab))
Place of Birth: **BIA** (Born in area)
Noted Equipment: **Knife**
Criminal Record: **Guilty** (Has One)
Religion: **MLD** (Mild)
T1

C4ISR E12 Known Data Card 26 – AM
Harun Shahzad El-Mofty (**S15**)
Military Record is **Still Serving**
Education Level is **High**
Associated Vehicle is **Burgundy Luxury Sedan** T2
Aali Abu Bakr Karim (**S13**)
Skill is **EL** (Electrical)
Address is **HAV** (Hanover Village)
Employment Type is **WC** (Blue Collar) T2

C4ISR E12 Known Data Card 26 – PM
Harun Shahzad El-Mofty (**S15**)
Tribal Affiliation is **Tajik**
Marital Status is **Single**
Religion is **Mld** (Mild) T1
Aali Abu Bakr Karim (**S13**)
Criminal Record is **None**
Tribal Affiliation is **Pastu**
Place of birth is **BIA** (Born Inside Area) T1

Master Listing + 3

Day 7 – Abu Navid Sultan Role Data Inject Card (S1)

CARD 27

Role Player Use ONLY

Background: Abu is a policeman that has met several interesting people on his beat.

C4ISR E12 Role Data Card 27 – AM
Associated Vehicle: **Black SUV**
Employment Type: **WC** (White Collar)
Military Record: **Never Served**
Skill: **FI** (Financial)
Address: **VV** (Vietnam Village)
Education Level: **High**
T2

C4ISR E12 Role Data Card 27 – PM
Tribal Affiliation: **Pastu**
Marital Status: **Single**
Nationality: **Afghan**
Place of Birth: **BIA** (Born in area)
Noted Equipment: **Uniform**
Criminal Record: **None**
Religion: **MLD** (Mild)
T1

C4ISR E12 Known Data Card 27 – AM
Khalilah Qismat Amirmoez (**S3**)
Military record is **Never Served**
Education Level is **High**
Associated Vehicle is **Burgundy Luxury Sedan**   T2
Zaman Noor Hakim (**S10**)
Skill is **ME** (Mechanical)
Address is **UV** (Utes Village)
Employment Type is **BC** (Blue Collar)   T2

C4ISR E12 Known Data Card 27 – PM
Khalilah Qismat Amirmoez (**S3**)
Tribal Affiliation is **Pastu**
Marital Status is **Married**
Religion is **Mld** (Mild)   T1
Zaman Noor Hakim (**S10**)
Criminal Record is **Guilty** (Has One)
Tribal Affiliation is **Tajik**
Place of birth is **BOA** (Born Outside of area)   T1

Master Listing + 3

Role Player Use ONLY

Background: Rasul is an out of work reporter who has reluctantly turned to crime as a living. He has made some new "friends" in his new pursuit.

C4ISR E12 Role Data Card 28 – AM
Associated Vehicle: **Burgundy Luxury Sedan**
Employment Type: **WC** (White Collar)
Military Record: **Still Serving**
Skill: **WR** (Writer)
Address: **HAV** (Hanover Village)
Education Level: **High**
T2

C4ISR E12 Role Data Card 28 – PM
Tribal Affiliation: **Pastu**
Marital Status: **Single**
Nationality: **Afghan**
Place of Birth: **BOA** (Born Outside of area)
Noted Equipment: **Cell Phone**
Criminal Record: **None**
Religion: **MLD** (Mild) T1

C4ISR E12 Known Data Card 28 – AM
Amirah Sani El-Amin (**S12**)
Military record is **Never Served**
Education Level is **Low**
Associated Vehicle is **White Panel Truck** T2
Yusuf Mehmud Samara (**S11**)
Skill is **CO** (Computers)
Address is **GT** (Gredge Town)
Employment Type is **BC** (Blue Collar) T2

C4ISR E12 Known Data Card 28 – PM
Amirah Sani El-Amin (**S12**)
Tribal Affiliation is **Tajik**
Marital Status is **Single**
Religion is **Mld** (Mild) T1
Yusuf Mehmud Samara (**S11**)
Criminal Record is **Guilty** (Has One)
Tribal Affiliation is **Beloch**
Place of birth is **BOA** (Born Inside Area) T1

Master Listing + 3

Role Player Use ONLY

Background: Ridha is a private photographer that covers social events and private parties – and also cases these places for future robberies. He has learned about a few interesting people along the way.

C4ISR E12 Role Data Card 29 – AM
Associated Vehicle: **White Panel Truck**
Employment Type: **NE** (Not Employed)
Military Record: **Never Served**
Skill: **PH** (Photographer)
Address: **HOV** (Horizon Village)
Education Level: **Low**
T2

C4ISR E12 Role Data Card 29 – PM
Tribal Affiliation: **Pastu**
Marital Status: **Single**
Nationality: **Muslma** (Muslim (Arab))
Place of Birth: **BIA** (Born Inside of area)
Noted Equipment: **Knife**
Criminal Record: **Guilty** (as One)
Religion: **MLD** (Mild)
T1

C4ISR E12 Known Data Card 29 – AM
Sami Mis'id El-Ghazzawy (**S8**)
Military record is **Served**
Education Level is **High**
Associated Vehicle is **Grey Sedan**   T2
Aali Abu Bakr Karim (**S13**)
Skill is **EL** (Electrical)
Address is **HAV** (Hanover Village)
Employment Type is **WC** (Blue Collar)   T2

| C4ISR E12 Known Data Card 29 – PM |
|---|
| Sami Mis'id El-Ghazzawy (**S8**) |
| Tribal Affiliation is **Pastu** |
| Marital Status is **Married** |
| Noted Equipment is **Cell Phone**   T1 |
| Aali Abu Bakr Karim (**S13**) |
| Criminal Record is **None** |
| Tribal Affiliation is **Pastu** |
| Place of birth is **BIA** (Born Inside Area)   T1 |

Master Listing + 3

CARD 30

Role Player Use ONLY
Background: A known petty thief, Rasul is out on parole but still keeps bad company.

C4ISR E12 Role Data Card 30 – AM

Associated Vehicle: **White Panel Truck**

Employment Type: **NE** (Not Employed)

Military Record: **Never Served**

Skill: **DR** (Driver)

Address: **HOV** (Horizon Village)

Education Level: **Low**

T2

C4ISR E12 Role Data Card 30 – PM

Tribal Affiliation: **Beloch**

Marital Status: **Single**

Nationality: **Muslma** (Muslim (Arab))

Place of Birth: **BIA** (Born in area)

Noted Equipment: **Knife**

Criminal Record: **Guilty** (Has One)

Religion: **MLD** (Mild)

T1

C4ISR E12 Known Data Card 30 – AM

Abu Navid Sultan (**S1**)

Military record is **Never Served**
Education Level is **High**
Associated Vehicle is **Black SUV**

T2

Zaman Noor Hakim (**S10**)

Skill is **ME** (Mechanical)
Address is **UV** (Utes Village)
Employment Type is **BC** (Blue Collar)

T2

C4ISR E12 Known Data Card 30 – PM

Abu Navid Sultan (**S1**)

Tribal Affiliation is **Pastu**
Marital Status is **Single**
Religion is **Mld** (Mild)

T1

Zaman Noor Hakim (**S10**)

Criminal Record is **Guilty** (Has One)
Tribal Affiliation is **Tajik**
Place of birth is **BOA** (Born Outside of area)

T1

Master Listing + 3

Role Player Use ONLY

Background: Harun is an criminal investigator who is chasing down a couple of villians. He may be in over his head as one of these is unknown to him an insurgent!

C4ISR E12 Role Data Card 31 – AM
Associated Vehicle: **Burgundy Luxury Sedan**
Employment Type: **WC** (White Collar)
Military Record: **Still Serving**
Skill: **ME** (Mechanical)
Address: **UV** (Utes Village)
Education Level: **High**
T2

C4ISR E12 Role Data Card 31 – PM
Tribal Affiliation: **Tajik**
Marital Status: **Single**
Nationality: **Afghan**
Place of Birth: **BIA** (Born Inside of area)
Noted Equipment: **Uniform**
Criminal Record: **None**
Religion: **MLD** (Mild)
T1

C4ISR E12 Known Data Card 31 – AM

Saif-al-Din Jinan Hakim (**S14**)

>   Military record is **Never Served**
>   Education Level is **High**
>   Associated Vehicle is **Brown Pickup Truck**   T2

Ikram I'timad Abdullah (**S4**)

>   Skill is **DR** (Driver)
>   Address is **TSV** (Time Square Village)
>   Employment Type is **NE** (Not Employed)   T2

C4ISR E12 Known Data Card 31 – PM

Saif-al-Din Jinan Hakim (**S14**)

>   Tribal Affiliation is **Tajik**
>   Marital Status is **Single**
>   Religion is **Rad** (Radical)   T1

Ikram I'timad Abdullah (**S4**)

>   Criminal Record is **Guilty** (Has One)
>   Tribal Affiliation is **Pastu**
>   Place of birth is **BOA** (Born Outside Area)   T1

Master Listing + 3

CARD 32

Role Player Use ONLY

Background: Rasul is working for the government to track the dealings of the Hazara tribe within the Company AO. He knows of at least two Hazara high value individuals.

C4ISR E12 Role Data Card 28 – AM
Associated Vehicle: **Burgundy Luxury Sedan**
Employment Type: **WC** (White Collar)
Military Record: **Still Serving**
Skill: **WR** (Writer)
Address: **HAV** (Hanover Village)
Education Level: **High**
T2

C4ISR E12 Role Data Card 28 – PM
Tribal Affiliation: **Pastu**
Marital Status: **Single**
Nationality: **Afghan**
Place of Birth: **BOA** (Born Outside of area)
Noted Equipment: **Cell Phone**
Criminal Record: **None**
Religion: **MLD** (Mild)
T1

C4ISR E12 Known Data Card 32 – AM

Habib Ala Ahmed (**S5**)
- Military record is **Never Served**
- Education Level is **Low**
- Associated Vehicle is **White Panel Truck**   T2

Hussain Mansoor El-Hashem (**S9**)
- Skill is **CO** (Computers)
- Address is **GT** (Gredge Town)
- Employment Type is **BC** (Blue Collar)   T2

C4ISR E12 Known Data Card 32 – PM

Habib Ala Ahmed (**S5**)
- Tribal Affiliation is **Hazara**
- Marital Status is **Single**
- Religion is **Mld** (Mild)   T1

Hussain Mansoor El-Hashem (**S9**)
- Criminal Record is **None**
- Tribal Affiliation is **Hazara**
- Place of birth is **BOA** (Born Outside Area)   T1

Master Listing + 3

Role Player Use ONLY

Background: Ridha is considered an up and coming engineer with ideas on infrastructure improvements. Ridha works in the Public Works department of the new Afghani government.

C4ISR E12 Role Data Card 33 – AM
Tribal Affiliation: **Pastu**
Marital Status: **Married**
Nationality: **Afghan**
Place of Birth: **BIA** (Born in area)
Noted Equipment: **Briefcase**
Criminal Record: **None**
Religion: **MLD** (Mild)   T1

C4ISR E12 Role Data Card 33 – PM
Associated Vehicle: **Burgundy Luxury Sedan**
Employment Type: **WC** (White Collar)
Military Record: **Never Served**
Skill: **ME** (Mechanical Engineer)
Address: **CCV** (Cook Corner Village)
Education Level: **High**
T2

C4ISR E12 Known Data Card 33 – AM
Saif-al-Din Jinan Hakim (**S14**)
Skill is **ME** (Mechanical Engineering)
Address is **UV** (Utes Village)
Employment Type is **BC** (Blue Collar)   T2
Zaman Noor Hakim (**S10**)
Criminal record is **None**
Education Level is **High**
Associated Vehicle is **Black SUV**   T2

C4ISR E12 Known Data Card 33 – PM
Saif-al-Din Jinan Hakim (**S14**)
Tribal Affiliation is **Tajik**
Marital Status is **Married**
Religion is **Mld** (Mild)   T1
Zaman Noor Hakim (**S10**)
Military Record is **Never Served**
Tribal Affiliation is **Pastu**
Place of birth is **BIA** (Born In Area)   T1

Master Listing

Day 9 – Harun Shahzad El-Mofty Role Data Inject Card (S15)   CARD 34

Role Player Use ONLY

Background: Harun is with a criminal organization that has dealings with insurgent organizations. Sometimes, he has transported equipment and other materials for them.

C4ISR E12 Role Data Card 34 – AM
Tribal Affiliation: **Pastu**
Marital Status: **Single**
Nationality: **Muslma** (Muslim (Arab))
Place of Birth: **BOA** (Born Outside Area)
Noted Equipment: **Knife**
Criminal Record: **Guilty** (Has one)
Religion: **MLD** (Mild)   T1

C4ISR E12 Role Data Card 34 – PM
Associated Vehicle: **Blue Motorcycle**
Employment Type: **NE** (Not Employed)
Military Record: **Never Served**
Skill: **DR** (Driver)
Address: **TSV** (Times Square Village)
Education Level: **Low**
T2

C4ISR E12 Known Data Card 34 – AM
Abu Navid Sultan (**S1**)
Tribal Affiliation is **Pastu**
Marital Status is **Single**
Nationality is **Muslma** (Muslim (Arab))   T1
Sami Mis'id El-Ghazzawy (**S8**)
Associated Equipment is **Cell Phone**
Tribal Affiliation is **Pastu**
Place of birth is **BOA** (Born Outside Area)   T1

C4ISR E12 Known Data Card 34 – PM
Abu Navid Sultan (**S1**)
Military Record is **Never Served**
Education Level is **Low**
Associated Vehicle is **White Panel Truck**   T2
Sami Mis'id El-Ghazzawy (**S8**)
Skill is **PH** (Photographer)
Address is **CCV** (Cook Corner Village)
Employment Type is **BC** (Blue Collar)   T2

Master Listing + 1

Role Player Use ONLY

Background: Rasul is an out of work reporter who has reluctantly turned to crime as a living. He has made some new "friends" in his new pursuit.

C4ISR E12 Role Data Card 35 – AM
Associated Vehicle: **Burgundy Luxury Sedan**
Employment Type: **WC** (White Collar)
Military Record: **Still Serving**
Skill: **WR** (Writer)
Address: **HAV** (Hanover Village)
Education Level: **High**
T2

C4ISR E12 Role Data Card 35– PM
Tribal Affiliation: **Pastu**
Marital Status: **Single**
Nationality: **Afghan**
Place of Birth: **BOA** (Born Outside of area)
Noted Equipment: **Cell Phone**
Criminal Record: **None**
Religion: **MLD** (Mild)
T1

C4ISR E12 Known Data Card 35 – AM

Amirah Sani El-Amin (**S12**)
  Military record is **Never Served**
  Education Level is **Low**
  Associated Vehicle is **White Panel Truck**   T2

Yusuf Mehmud Samara (**S11**)
  Skill is **CO** (Computers)
  Address is **GT** (Gredge Town)
  Employment Type is **BC** (Blue Collar)   T2

C4ISR E12 Known Data Card 35– PM

Amirah Sani El-Amin (**S12**)
  Tribal Affiliation is **Tajik**
  Marital Status is **Single**
  Religion is **Mld** (Mild)   T1

Yusuf Mehmud Samara (**S11**)
  Criminal Record is **Guilty** (Has One)
  Tribal Affiliation is **Beloch**
  Place of birth is **BOA** (Born Inside Area)   T1

Master Listing + 3

CARD 36

Role Player Use ONLY

Background: Husain is an avid reader of insurgent literature for his intelligence-related military job. He knows of Amirmoez by his writing and research. He also know El-Ghazzwy from his car pool for work.

C4ISR E12 Role Data Card 36 – AM

Tribal Affiliation: **Tajik**

Marital Status: **Single**

Nationality: **Afghan**

Place of Birth: **BIA** (Born in area)

Noted Equipment: **Uniform**

Criminal Record: **None**

Religion: **MLD** (Mild)

T1

C4ISR E12 Role Data Card 36 – PM

Associated Vehicle: **Burgundy Luxury Sedan**

Employment Type: **WC** (Blue Collar)

Military Record: **Still Serving**

Skill: **ME** (Mechanical)

Address: **UV** (Utes Village)

Education Level: **High**

T2

C4ISR E12 Known Data Card 36 – AM

Sami Mis'id El-Ghazzawy (**S8**)

    Military record is **Still Serving**
    Education Level is **High**
    Associated Vehicle is B**urgundy Luxury Sedan**   T2

Khaliah Qismat Amirmoez (**S3**)

    Skill is **WR** (Writing)
    Address is **CCV** (Cook Corner Village)
    Employment Type is **NE** (Not Employed)   T2

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C4ISR E12 Known Data Card 36 – PM

Sami Mis'id El-Ghazzawy (**S8**)

    Tribal Affiliation is **Pastu**
    Marital Status is **Single**
    Religion is **Mild** (Mld)   T1

Khaliah Qismat Amirmoez (**S3**)

    Criminal Record is **Guilty** (Has One)
    Tribal Affiliation is **Tajik**
    Place of birth is **BIA** (Born inside Area)   T1

Master Listing

List of Symbols, Abbreviations, and Acronyms

Add   address

AFP   artillery fire point

AO   area of operations

ARL   U.S. Army Research Laboratory

BC   blue collar (Global Graph value)

BFT   blue force tracker

BIA   born in area (Global Graph value)

BOA   born outside of area (Global Graph value)

C   criminal (Global Graph value)

C4ISR   Command, Control, Communications, and Computers, Intelligence, Surveillance, and Reconnaissance

CCV   Cook Corner Vil (Global Graph value)

CERDEC   U.S. Army Communications-Electronics Research, Development and Engineering Center

CO   computer (Global Graph value)

COIN   counterinsurgency

COIST   Company Intelligence Support Team

COP   company outpost

CR   criminal record

DCGS-A   Distributed Common Ground System-Army

DR   driving (Global Graph value)

E12   Event 12

Ed   education

EL   electrical (Global Graph value)

Emp   employment

Equip	Equipment
F	friendly or female (Global Graph value)
FCS	future combat systems
FI	financial (Global Graph value)
FOB	forward operating base
FRAGO	fragmentary order
Gen	gender
GT	Gredge Town (Global Graph value)
HAV	Hanover Vil (Global Graph value)
HDPT	heterogeneous data proximity tool
HMMWV	high-mobility multiwheeled vehicle
HN	host nation
HOV	Horizon Vil (Global Graph value)
HUMINT	human intelligence
HVI	high-value individual
I	insurgent (Global Graph value)
ID	identification
IED	improvised explosive device
IN	infantry
M	male or married (Global Graph value)
MDS	multidimensional scaling
ME	mechanical (Global Graph value)
Mld	mild (Global Graph value)
MLS 1.0	Multi-Level Scenario Module 1.0
MR	military record
MS	marital status
Nat	nationality

NCO	Noncommissioned officer
NE	not employed (Global Graph value)
NHN	not of the host nation
NM	not married (Global Graph value)
NS	never served (Global Graph value)
NTC	U.S. Army National Training Center
O/O	on order
Op	operational
OPFOR	opposition force
OPORD	operations order
Org	organization
OTM	on the move
P#	purpose # (FRAGO example)
PH	photography (Global Graph value)
PIR	priority intelligence requirement
POB	place of birth
Rad	radical (Global Graph value)
Rel	religion
S	served (Global Graph value)
Sk	skill
SoS	system of systems
SS	still serving (Global Graph value)
Sub	subject
T#	task number (FRAGO example)
T1	first data group
T2	second data group
TA	tribal association

TOC   tactical operations center

TSV   Times Square Vil (Global Graph value)

U   unknown/unaffiliated (Global Graph value)

UV   Utes Vil (Global Graph value)

Vil   village

VNV   Viet Nam Vil (Global Graph value)

VV   Vertol Vil (Global Graph value)

WC   white collar (Global Graph value)

WR   writing (Global Graph value)

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